Natural Resources Canada

2012-13

Departmental Performance Report

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P.C., M.P.
Minister of Natural Resources

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Minister's Message

I am pleased to present the 2012-13 Departmental Performance Report for Natural Resources Canada (NRCan).

Canada is blessed with a vast incredible wealth of natural resources, which contribute significantly to our national economy. Resource industries play a critical role in delivering jobs, growth and prosperity for Canadians. That is why our government has made such great strides over the past year in our plan for *Responsible Resource Development* — a plan that has increased the protection of the environment and streamlined regulatory reviews.

Our Government is focused on bolstering investment and job creation, all while protecting Canada's environment and strengthening Aboriginal consultations. In fact, hundreds of resource projects are planned or proposed across Canada in the next ten years, worth as much as $650 billion dollars.

Enormous opportunities exist for Canada in the global energy market. Canada has massive energy assets and world-leading energy expertise, and is well positioned to help rapidly emerging economies with their growing energy and resource needs.

During the past year, NRCan has seen significant progress on many fronts. Our accomplishments include:

- reaching out to new markets, especially in the burgeoning Asia Pacific region;
- improving environmental standards to protect our children's future while creating the foundation for their prosperity;
- enhancing energy efficiency to benefit Canadian consumers and businesses;
- making real progress on clean energy, which will create jobs today and a cleaner environment tomorrow;
- restructuring Atomic Energy of Canada Limited and continuing our work to support an improved supply of medical isotopes;
- upgrading our satellite station facilities with new state-of-the-art antennas;
- conducting critical work to define the area of the continental shelf where Canada may exercise its sovereign rights over the natural resources of the seabed;
- collaborating with universities across the country on advanced materials research to develop new technologies for use in the automotive, steel and pipeline industries;
- supporting the ongoing transformation of Canada's forest sector, driven by innovation and the development of new markets for Canadian forest products; and
- engaging Aboriginal groups and enhancing economic opportunities for Aboriginal peoples through the work of the Special Federal Representative on West Coast Energy Infrastructure.

This report provides more details about the many achievements over the last year at NRCan that support the responsible development of Canada's natural resources.

The Honourable Joe Oliver
P.C., M.P.
Minister of Natural Resources

Section I: Organizational Overview

Raison d'être

NRCan's vision is to improve the quality of life of Canadians by creating a sustainable resource advantage. It seeks to achieve this vision by working to improve the competitiveness of the natural resource sectors and to grow their contribution to Canada's economy and by using its knowledge and expertise of Canada's landmass to support the safety and security of citizens.

Responsibilities

The Minister of Natural Resources is specifically responsible for, or has responsibilities under, more than 30 Acts of Parliament[1]. The Minister's core powers, duties and functions are set forth in the *Department of Natural Resources Act*[2], the *Resources and Technical Surveys Act*[3]and the *Forestry Act*[4]. NRCan also works in areas of shared responsibility with the provinces.

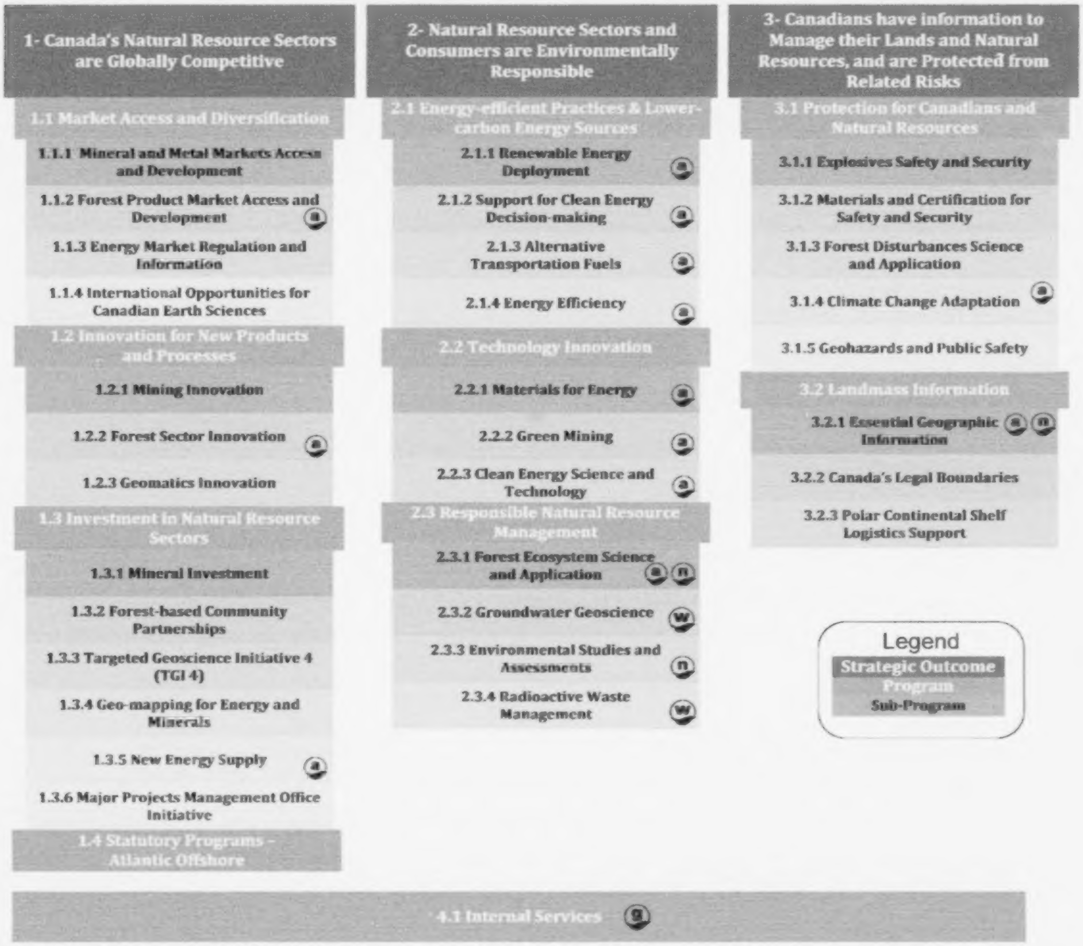
Within the Government of Canada, the Minister of Natural Resources also has responsibilities for the natural resources *portfolio*[5] which includes:

- Atomic Energy of Canada Limited[6] (AECL);
- National Energy Board[7] (NEB);
- Canadian Nuclear Safety Commission[8] (CNSC);
- Canada-Newfoundland and Labrador Offshore Petroleum Board [9](CNLOPB);
- Canada-Nova Scotia Offshore Petroleum Board [10] (CNSOPB);
- Northern Pipeline Agency[11] (NPA);
- Sustainable Development Technology Canada[12] (STDC); and
- Energy Supplies Allocation Board[13] (ESAB) (inactive).

To deliver on its responsibilities, NRCan relies on a number of instruments. It uses science and technology (S&T) to help address priorities and plan for the future. It develops policies, programs and regulations that help create a sustainable resource advantage, supporting strong and competitive natural resource sectors that are environmentally and socially responsible. It uses partnerships and international collaboration to help drive progress on natural resource issues that are important to Canadians. More broadly, the Department plays a critical role in Canada's future, contributing to high-paying jobs, business investment and overall economic growth in Canada's natural resource sectors. NRCan has offices and laboratories from coast to coast to coast. About half of its 94 occupied facilities are in the National Capital Region, with the remainder being distributed from Atlantic Canada, through Quebec and Ontario, to the Western and Pacific Regions and Northern Canada.

Strategic Outcomes and Program Alignment Architecture

The diagram below presents NRCan's strategic outcomes and inventory of programs for 2012-13, commonly referred to as the Program Alignment Architecture. Through its programs, NRCan supports the achievement of three Government of Canada outcomes: *Strong Economic Growth, A Clean and Healthy Environment,* and *A Safe and Secure Canada.*



- **1- Canada's Natural Resource Sectors are Globally Competitive**
  - 1.1 Market Access and Diversification
    - 1.1.1 Mineral and Metal Markets Access and Development
    - 1.1.2 Forest Product Market Access and Development (a)
    - 1.1.3 Energy Market Regulation and Information
    - 1.1.4 International Opportunities for Canadian Earth Sciences
  - 1.2 Innovation for New Products and Processes
    - 1.2.1 Mining Innovation
    - 1.2.2 Forest Sector Innovation (a)
    - 1.2.3 Geomatics Innovation
  - 1.3 Investment in Natural Resource Sectors
    - 1.3.1 Mineral Investment
    - 1.3.2 Forest-based Community Partnerships
    - 1.3.3 Targeted Geoscience Initiative 4 (TGI 4)
    - 1.3.4 Geo-mapping for Energy and Minerals
    - 1.3.5 New Energy Supply (a)
    - 1.3.6 Major Projects Management Office Initiative
  - 1.4 Statutory Programs – Atlantic Offshore
- **2- Natural Resource Sectors and Consumers are Environmentally Responsible**
  - 2.1 Energy-efficient Practices & Lower-carbon Energy Sources
    - 2.1.1 Renewable Energy Deployment (a)
    - 2.1.2 Support for Clean Energy Decision-making (a)
    - 2.1.3 Alternative Transportation Fuels (a)
    - 2.1.4 Energy Efficiency (a)
  - 2.2 Technology Innovation
    - 2.2.1 Materials for Energy (a)
    - 2.2.2 Green Mining (a)
    - 2.2.3 Clean Energy Science and Technology (a)
  - 2.3 Responsible Natural Resource Management
    - 2.3.1 Forest Ecosystem Science and Application (a) (n)
    - 2.3.2 Groundwater Geoscience (w)
    - 2.3.3 Environmental Studies and Assessments (n)
    - 2.3.4 Radioactive Waste Management (w)
- **3- Canadians have information to Manage their Lands and Natural Resources, and are Protected from Related Risks**
  - 3.1 Protection for Canadians and Natural Resources
    - 3.1.1 Explosives Safety and Security
    - 3.1.2 Materials and Certification for Safety and Security
    - 3.1.3 Forest Disturbances Science and Application
    - 3.1.4 Climate Change Adaptation (a)
    - 3.1.5 Geohazards and Public Safety
  - 3.2 Landmass Information
    - 3.2.1 Essential Geographic Information (a) (n)
    - 3.2.2 Canada's Legal Boundaries
    - 3.2.3 Polar Continental Shelf Logistics Support
- 4.1 Internal Services (g)

Legend
- Strategic Outcome
  - Program
    - Sub-Program

NRCan's activities also contribute to the Federal Sustainable Development Strategy[14] (FSDS) (see legend below).

- (a) **Theme I** Addressing Climate Change and Air Quality
- (w) **Theme II** Maintaining Water Quality and Availability
- (n) **Theme III** Protecting Nature
- (g) **Theme IV** Shrinking the Environmental Footprint - Beginning with Government

*The Management, Results and Resources Structure (MRRS) Policy underwent changes that came into effect in April 2012. Updates have been made to the MRRS nomenclature: "Program Activity Architecture" becomes "Program Alignment Architecture" (PAA); "Program Activity" becomes "Program"; "Sub-Activity" becomes "Sub-Program".

Organizational Priorities

In 2012-13, NRCan identified five priorities critical to meeting its strategic outcomes and supporting Government of Canada priorities. These priorities have guided the delivery of results, which are presented below for each priority.

The success in delivering each priority is assessed against plans and commitments presented in NRCan's 2012-13 Report on Plans and Priorities[15].

Unlock resource potential through responsible development	**Type:** Ongoing	**Strategic Outcomes (SO) 1& 2** Programs 1.3 & 2.1

Why this is a priority
The responsible development of Canada's natural resources is a critical contributor to Canada's current and future prosperity. Over the next 10 years, planned investments of up to $650 billion in hundreds of major energy, mining and forest sector projects across all regions will spur jobs and economic growth. Seizing this opportunity requires geoscience knowledge, investment, capital, energy and other infrastructure, an efficient and effective regulatory system, and meaningful consultation and engagement with Aboriginal peoples. This priority was advanced in 2012-13 through targeted activities covered by the following programs.

Investments in Natural Resource Sectors (1.3)
NRCan supported the roll-out of the Government's plan for Responsible Resource Development[16] (RRD) and coordinated related policies and regulations to ensure its full implementation by summer 2013. The Department managed the federal regulatory process for more than 74 projects, representing $200 billion in investments, to ensure timely and predictable reviews and that new legislated timelines were met. It also advanced measures to enhance consultations and engagement with Aboriginal groups, including the appointment of the Special Federal Representative on West Coast Energy Infrastructure.

NRCan provided policy leadership to advance new initiatives to strengthen pipeline safety, including the development of new regulations to reinforce the National Energy Board[17]'s compliance and enforcement activities. It also provided scientific analysis to support federal efforts to ensure a world-class tanker safety regime.

Investment in natural resources was further supported through the Geo-mapping for Energy and Minerals Program[18] (GEM). GEM released new maps, geophysical surveys and other information on all three territories and northern parts of six provinces to support resource investment and other types of land-use decisions. NRCan also continued to work in collaboration with Aboriginal Affairs and Northern Development Canada and the Canadian Northern Economic Development Agency in solidifying and applying a minerals development cycle approach to facilitate the sustainable development of mineral resources in the North. The Targeted Geoscience Initiative 4[19] (TGI-4) continued to support industry in developing better exploration methods and innovative ways for deep exploration. TGI-4 also delivered new information that improves stakeholders' understanding of distal indicators of ore environments and relevant exploration methods and technology.

Energy-Efficient Practices and Lower-Carbon Energy Sources (2.1)
To support clean energy development in Atlantic Canada, NRCan negotiated an agreement on the terms and conditions for providing a loan guarantee for the Lower Churchill River Hydroelectricity Projects[20].

Expand markets and global partnerships	**Type:** Ongoing	**Strategic Outcome (SO) 1** Program(s) 1.1 & 1.3

Why this is a priority
Exports of natural resource products generate significant benefits for Canadians. With slower-than-anticipated economic growth in the United States and increasing domestic supply of US oil and gas as well as high demand for natural resources in fast-growing economies in the Asia-Pacific region, Canada must focus on expanding and diversifying its markets. It does so by, for example, supporting the expansion of energy infrastructure and by positioning itself as a reliable and responsible supplier of natural resources worldwide. This priority was advanced in 2012-13 through targeted activities covered by the following programs.

Market Access and Diversification (1.1)
NRCan worked bilaterally to strengthen key partnerships with growing economies in the Asia-Pacific region such as China, Japan and India. For example, NRCan hosted a meeting of the Canada-China Joint Working Group on Energy Cooperation [21] with a focus on energy policy, fossil fuels and nuclear issues. Successful trade missions were made to Japan and South Korea to strengthen investment, innovation and partnerships. Strategic energy objectives were discussed at the Canada-India Energy Forum, which laid the groundwork for a subsequent mission by Prime Minister Harper to India, where key energy-focused deliverables were announced, such as a ministerial dialogue on energy and a memorandum of understanding on oil and gas.

Canada pursued strategic bilateral engagement with the United States to strengthen their energy and natural resource relationship through various activities such as the annual Canada-US Energy Consultative Mechanism. The discussions were devoted to a wide range of energy issues, including oil market development and the oil market outlook for North America. Other outreach activities were undertaken, including visits by the Minister to promote Canada's interests in US energy markets.

NRCan leveraged multilateral fora to engage key partners and promote Canada as a reliable and responsible supplier of natural resources. For example, NRCan led a Canadian delegation to the meeting of energy ministers of the Asia-Pacific Economic Cooperation in St. Petersburg, Russia. The theme of the meeting was *Energy Security: Challenges and Strategic Choices*.

Under the Expanding Market Opportunities Program[22] for Canadian forest products, NRCan signed contribution agreements valued at $8.5 million to develop offshore markets and another $4.5 million to support research for building code changes and the promotion of greater use of wood in non-residential and mid-rise applications in North America.

The Department conducted significant outreach to enhance global market acceptance of Canadian energy and natural resources and to minimize discriminatory measures, such as the European Union's Fuel Quality Directive[23]. These included technical discussions with European officials, a visit by the Minister and engagement of European embassies in Canada.

NRCan worked closely with Public Safety Canada[24] and Industry Canada[25] to develop policies that would allow the Government to deliver on its priority of expanding markets while ensuring that further foreign state control of Canadian business would be of net benefit to Canada. The Department thereby contributed to the clarification of the Government's policy on investments in Canada by state-owned enterprises.

Investments in Natural Resource Sectors (1.3)
NRCan contributed to the implementation of Canada's Corporate Social Responsibility (CSR) Strategy for the Canadian International Extractive Sector[26] with the Canadian International Development Agency and Foreign Affairs and International Trade Canada (now Foreign Affairs, Trade and Development Canada). The CSR Strategy is designed to improve the competitive advantage of Canadian companies in the international extractive sector by enhancing their ability to manage social and environmental risks.

Innovate for competitiveness and environmental performance	Type: Ongoing	Strategic Outcomes (SO) 1 & 2 Program(s) 1.2, 2.1 & 2.2

Why this is a priority
Innovation is critical to both resource sector competitiveness and improved environmental performance, contributing to increased productivity, lower costs, and value-added and new products, and helping to meet environmental standards and regulations. The priority was advanced in 2012-13 through targeted activities covered by the following programs.

Innovation for New Products and Processes (1.2)
Through the Transformative Technologies Program[27] (TTP), NRCan pursued research that included a new process to purify and use methanol from pulp mill by-products, thereby decreasing production costs and facilitating the development of cellulose filaments that can be used as an additive to create new paper products with increased strength. These innovations are helping to diversify wood products and their end uses in traditional markets.

The Investments in Forest Industry Transformation [28](IFIT) program funded six new high-value technologies at forest products facilities, including two advanced bio-technology processes.

Energy-Efficient Practices and Lower-Carbon Energy Sources (2.1)

NRCan generated energy savings in all sectors through its ecoENERGY Efficiency initiatives, which aim to reduce energy use. This contributes to Canada's goal of reducing greenhouse gas emissions while improving the competitiveness of Canadian industry and helping Canadians save money on their energy bills.

Innovation Technology (2.2)
The department leveraged $253 million in investments for two large-scale carbon capture and storage demonstration projects: Shell Canada's Energy Quest Project [29]and Enhance Energy's Alberta Carbon Trunk Line Project[30].

Contribution agreements were signed with provincial partners on alternative technologies for medical isotope production through the Isotope Technology Acceleration Program[31] (ITAP).

NRCan undertook research and development (R&D) projects in collaboration with automotive parts suppliers and original equipment manufacturers—such as Cosma, Meridian, General Motors and Ford—which also help to enhance the competitiveness of Canadian industry. The types of technology developed included high formability aluminum sheet, high-integrity casting of magnesium components, friction stir welding, spot welding, and durability of aluminum joints. All of these technologies enable the manufacture of novel body structures that can reduce the weight of vehicles and thereby increase fuel economy.

Budget 2013 announced the allocation of an additional $325 million to Sustainable Development Technology Canada (SDTC) over the next eight years, which would bring federal investments to a total of $915 million and would extend the end date of SDTC to 2020-21 once a new agreement is reached.

Leverage S&T knowledge for safety and security risk management	Type: Ongoing	Strategic Outcome (SO) 3 Program(s) 3.1 & 3.2

Why this is a priority
NRCan has an important role in preparing for and managing threats and emergencies associated with natural and man-made hazards, including earthquakes, forest fires and industrial incidents. NRCan also plays a key role in providing up-to-date information on Canada's natural resources and landmass through Open Government, a whole-of-government initiative to ensure that Canadians have easy access to the right information, in the right format, and in a timely manner. This priority was advanced in 2012-13 through targeted activities covered by the following programs.

Protection for Canadians and Natural Resources (3.1)
The Department shared knowledge with provincial partners to analyze the risks associated with the spread of infestations in Canadian forests (e.g., emerald ash borer) and provided expertise to support prevention efforts in unaffected areas.

Landmass Information (3.2)
NRCan developed a new infrastructure layer for the National Railway Network, enhanced in partnership with Public Safety Canada and Defence Research and Development Canada. This data layer has been incorporated into the Multi-Agency Situational Awareness System[32]. This system allows the Canadian safety and security community to access landmass and geohazards information. Several other geo-hazard resources were also developed, including a national landslide susceptibility map, national tsunami map, shear wave velocity measurement guidelines, and national earthquake model.

NRCan invested in its satellite infrastructure to address the growing demand and application of satellite imagery. Also, in 2012-13, NRCan launched the new GeoGratis[33] web site. The site, which houses over 180,000 geospatial datasets, enables users to more efficiently search for datasets that can be used in the development of new and innovative location-based applications. NRCan also launched the Federal Geospatial Platform[34] initiative, which is consistent with Canada's Action Plan on Open Government[35]. This Platform will support data access, integration, analysis and visualization capacity to inform socioeconomic and environmental decision-making. These enhancements will allow users to develop innovative location-based applications tailored to their needs based on accurate and authoritative data, providing greater capacity to carry out safety and security risk management.

Increase the effectiveness and efficiency of NRCan operations	Type: Ongoing	Internal Services Program 4.1

Why this is a priority
NRCan is increasing the effectiveness and efficiency of its operations as both a responsible steward of public resources and a contributor to the Government's priority of returning to a balanced budget.

The Department implemented, or took steps to implement, government-wide efficiency initiatives. It transferred selected information technology services and 76 associated employees to Shared Services Canada. It completed three of the seven phases of the Common Human Resources Business Process, positioning the Department to meet the government-wide deadline for implementation. It launched a new, user-tested structure for a consolidated website, which will position it to transition to a single, Government of Canada website. And it carefully implemented workforce adjustment, monitoring progress through a Deputy Minister-led Implementation Steering Committee.

NRCan undertook a number of department-specific initiatives. As part of its business transformation agenda, it is implementing GCDocs, which will transform the way its employees manage, access and use information. Through this project, the department will establish a new platform for electronic document and records management and will be able to cost-effectively implement the Treasury Board Directive on Recordkeeping[36].

Actions were also taken to optimize the contribution of a smaller workforce. Performance reviews were completed for 95% of employees. The Department began implementation of its Wellness and Disability Management Initiative. And it published a Role of the Manager paper, explaining the basics of management in the Public Service.

Finally, the Department took efforts to improve the effectiveness and efficiency of future investment decisions. It developed an Investment Plan and adopted a directive on Investment Planning and Project Management. It also developed an Information Management Technology Strategic Plan.

Risk Analysis

In 2012-13, the Department managed a range of key risks, both strategic and operational, which are contained in its Corporate Risk Profile. Two of those risks—Market Diversification and Barriers to Investment, and Hazards and Emergency Management—are discussed here.

Context

Canada's natural resource sectors—which directly and indirectly account for almost one-fifth of the country's nominal Gross Domestic Product (GDP) and close to 1.8 million jobs—face both risks and opportunities in trying to diversify markets and reduce barriers to investment. The risks are particularly acute for the energy sector. Canada's only customer for crude oil and gas, the United States, is expected to become not only energy self-sufficient in the next 20 years, but also a net exporter of liquefied natural gas. Oil transportation capacity is already tight, and will potentially be insufficient by 2016-17 to accommodate the expected growth in oil sands production. At the same time, however, the rapid growth in emerging economies presents opportunities for Canada to diversify its markets. According to the International Energy Agency, China is now the largest energy consumer in the world and India is set to become the third largest consumer by 2030.

Without concerted action to diversify our energy markets, Canada will be unable to fully realize the economic and social benefits of its natural resource endowment. New and improved infrastructure is needed to transport oil west, east and south to accommodate growing production from the oil sands, access the growing Asia-Pacific markets and to ensure Canada can obtain the best prices for its oil. For liquefied natural gas, export is the only means by which Canada can secure long-term contracts and sustain its natural gas industry in a growing, competitive market.

Canada's natural resource sectors also face barriers to investment stemming from economic, environmental, and social factors. Development projects are capital intensive and highly sensitive to market volatility, labour and cost pressures, and fiscal regimes, and as global competition increases, investors have other options. This is why NRCan is undertaking regulatory reform under the plan for Responsible Resource Development to establish both certainty of timelines and better regulatory instruments that align with those of the provinces.

With respect to hazards and emergency management, NRCan plays a key role—in partnership with other government departments and stakeholders—in ensuring the safety and security of Canadians by providing timely and accurate scientific and technical information as well as advice and guidance on natural hazards. By providing knowledge on Canada's lands and natural resources, NRCan enables informed decision making and facilitates the responsible development and management of Canada's natural resources and land.

RISK ANALYSIS

Risk	Risk Response Strategy	Link to PAA*	Link to Priorities
Market Diversification and Barriers to Investment	Through its policy, programs and science and technology, NRCan supports the diversification of markets for Canada's natural resources and the reduction of barriers to investment. The effectiveness of NRCan's risk responses is reflected in, for example, the increase of 54% in the value of exports of natural resource products during the period 2003 to 2012; they now represent more than half of all domestic exports. Comparatively, exports of all other goods, excluding those associated with the natural resource sectors, fell by 3% during the same period. Despite global market volatility, investors continue to pursue a range of opportunities for oil and liquefied natural gas infrastructure in Canada. Currently, 140 major oil and gas projects, valued at $310 billion, are under way or planned over the next 10 years. Proposed oil pipelines alone would add up to 3 million barrels per day of export capacity by 2018. Further, NRCan's activities contributed to foreign direct investment in Canada's natural resources of $217 billion in 2012, accounting for a third of Canada's total foreign investment, a percentage that has remained stable for the past five years. In 2012-13, NRCan undertook a number of initiatives to address the risks and opportunities identified above, including: • Undertaking regulatory reform under the plan for Responsible Resource Development to establish both certainty of timelines and better regulatory instruments that align with those of the provinces; • Strengthening pipeline safety to assure Canadians that the Government places priority on environmental protection and will follow a "polluter pays" principle; • Promoting Canada's environmental record in its development of natural resources at home and abroad; • Sustaining engagement with global buyers to ensure future markets, through missions and other bilateral partnerships, including with the United States; • Advancing Canada's relationships with key prospective global partners including China, India, Japan and Korea through regular Prime Ministerial and Ministerial engagement; • Addressing trade barriers (e.g., the European Union's Fuel Quality Directive); and • Leveraging S&T knowledge for informing investment decision making, for example, by developing and disseminating information through the Geo-mapping for Energy and Minerals program on the potential mineral deposits in Canada's North to reduce the risks of development, and by developing, in partnership with academia and FPInnovations, new forest products and processes.	Canada's natural resource sectors are globally competitive Natural resource sectors and consumers are environmentally responsible Canadians have information to manage their lands and natural resources, and are protected from related risks	Expand markets and global partnerships Unlock resource potential through responsible resource development
Risk	**Risk Response Strategy**	**Link to PAA***	**Link to Priorities**
Hazards and Emergency Management	NRCan continuously scans its environment and that of the natural resource sectors to identify existing and emerging risks, assesses the potential impacts on the natural resource sectors, and ensures that it has the proper strategies, policies, programs, regulations and capacity in place to respond. The effectiveness of NRCan's risk responses is reflected in stakeholders' use of the Department's data, tools and expertise to manage and mitigate risks and hazards. For example, the District of North Vancouver incorporated NRCan's seismic risk assessment scenarios into its sustainable hazard risk management and disaster risk reduction initiatives. The Canadian Commission on Building and Fire Codes incorporated NRCan's information into the National Building Code. And the Canadian Space Agency used NRCan's analysis of the radiation environment to inform the design of its Polar Communication and Weather mission.	Canadians have information to manage their lands and natural resources, and are protected from related risks	Leverage S&T knowledge for safety and security risk management

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* Program Alignment Architecture

RISK ANALYSIS			
Risk	Risk Response Strategy	Link to PAA*	Link to Priorities
	In 2012-13, NRCan undertook a number of initiatives to address the risks identified above, including: • Annually updating its Strategic Emergency Management Plan based on lessons learned from table top exercises that test each of the Strategic Emergency Management Plan's specific supporting emergency management plans; • Improving the national earthquake hazard and space weather forecast models; • Developing a new infrastructure layer for the National Railway Network, in partnership with Public Safety Canada and Defence Research and Development Canada, which has been incorporated into a system that allows the Canadian safety and security community to access landmass and geohazards information; • Developing a national landslide susceptibility map, national tsunami map, shear wave velocity measurement guidelines, and national earthquake model; • Conducting ongoing research on areas such as investigating the effects of accidental offshore discharges and spills and the development of remediation options, improving pipeline materials standards, and developing new high-strength pipeline steels.		

Summary of Performance

NRCan revised its 2012-13 Program Alignment Architecture (PAA) in an effort to better showcase its contribution to Canada and Canadians and more effectively measure results.

Throughout this report, the amount in the Difference column is calculated as Planned minus Actual for both financial and human resources.

2012-13 Financial Resources – Total Departmental ($ thousands)

	Total Budgetary Expenditures	Planned Spending	Total Authorities	Actual Spending	Difference
Program Spending	1,676,903	1,676,903	1,706,002	1,281,846	395,057
Statutory Programs – Atlantic Offshore	1,134,954	1,134,954	684,965	684,965	449,989
TOTAL	**2,811,857**	**2,811,857**	**2,390,967**	**1,966,811**	**845,046**

2012-13 Human Resources – Total Departmental (FTEs*)

Planned	Actual	Difference
4,495	4,224	271

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Summary Tables – For Strategic Outcomes and Programs

Strategic Outcome 1: Canada's Natural Resource Sectors are Globally Competitive

Financial Resources ($ thousands)

Programs	Total Budgetary Expenditures 2012-13	Planned Spending			Total Authorities 2012-13	Actual Spending			Alignment to Government of Canada Outcomes
		2012-13	2013-14	2014-15		2012-13	2011-12	2010-11	
Market Access and Diversification	28,258	28,258	44,913	42,764	57,374	55,420	*	*	Strong economic growth[37]
Innovation for New Products and Processes	71,292	71,292	102,525	61,787	99,731	93,948	*	*	
Investment in Natural Resource Sectors	74,618	74,618	54,484	48,508	74,985	73,319	*	*	
Statutory Programs – Atlantic Offshore	1,134,954	1,134,954	1,255,167	1,100,100	684,965	684,965	*	*	
Strategic Outcome 1 **Sub-Total**	**1,309,122**	**1,309,122**	**1,457,089**	**1,253,159**	**917,054**	**907,652**	*	*	

*Actual Spending for 2011-12 reflects that year's PAA structure, for which there were two program activities under Strategic Outcome 1: 1.1 Economic Opportunities for Natural Resources (Actual Spending for 2011-12 of $1,439,492,491), which includes the Statutory Programs related to the Atlantic Offshore, with Actual Spending for 2011-12 of $1,222,730,140), and 1.2 Natural Resource-based Communities (Actual Spending for 2011-12 of $23,288).

Actual Spending for 2010-11 reflects that year's PAA structure, for which there were two program activities under Strategic Outcome 1: 1.1 Economic Opportunities for Natural Resources (Actual Spending for 2010-11 of $2,351,960,558), which includes the Statutory Programs related to the Atlantic Offshore, and Actual Spending for 2010-11 of $2,103,259,499) and 1.2 Natural Resource-based Communities (Actual Spending for 2010-11 of $12,683,530).

The difference between Planned Spending and Total Authorities is mainly attributable to adjustments of statutory payments under the Newfoundland Offshore Petroleum Resource Revenue Fund, the payments to the Nova Scotia Offshore Revenue Account, the Crown Share Adjustment Payment for Nova Scotia Offshore Petroleum Resources and the announcement in Canada's Economic Action Plan 2012 of funding to support the Forest Innovation Program and Expanding Market Opportunities Program.

Strategic Outcome 2: Natural Resource Sectors and Consumers are Environmentally Responsible

Financial Resources ($ thousands)

Programs	Total Budgetary Expenditures 2012-13	Planned Spending			Total Authorities 2012-13	Actual Spending			Alignment to Government of Canada Outcomes
		2012-13	2013-14	2014-15		2012-13	2011-12	2010-11	
Energy-Efficient Practices and Lower-Carbon Energy Sources	585,488	585,488	444,318	464,096	521,650	342,425	*	*	A clean and healthy environment[38]
Technology Innovation	430,843	430,843	265,762	202,009	290,673	152,200	*	*	
Responsible Natural Resource Management	234,547	234,547	341,051	157,779	310,838	236,875	*	*	
Strategic Outcome 2 **Sub-Total**	**1,250,878**	**1,250,878**	**1,051,131**	**823,885**	**1,123,161**	**731,500**	*	*	

*Actual Spending for 2011-12 reflects that year's PAA structure, for which there were two program activities under Strategic Outcome 2: 2.1 Clean Energy (Actual Spending for 2011-12 of $1,323,313,646) and 2.2 Ecosystem Risk Management (Actual Spending for 2011-12 of $199,083,001).

Actual Spending for 2010-11 reflects that year's PAA structure, for which there were two program activities under Strategic Outcome 2: 2.1 Clean Energy (Actual Spending for 2010-11 of $1,329,561,608) and 2.2 Ecosystem Risk Management (Actual Spending for 2010-11 of $198,295,951).

The difference between Planned Spending and Total Authorities is primarily a result of Budget 2012 Savings Measures in relation to ecoENERGY for Biofuels, ecoENERGY for Renewable Power, ecoENERGY for Innovation Initiative, lapsing funds due to, on average, lower incentive amounts claimed by project proponents under ecoENERGY for Renewable Power, the use of funding related to the reprofiling of the Clean Energy Fund, and the announcement in Budget 2012 of funding to compensate property owners and municipalities for potential losses as part of the Port Hope Area Initiative.

Strategic Outcome 3: Canadians have Information to Manage their Lands and Natural Resources, and are Protected from Related Risks

Financial Resources ($ thousands)

Programs	Total Budgetary Expenditures 2012-13	Planned Spending			Total Authorities 2012-13	Actual Spending			Alignment to Government of Canada Outcomes
		2012-13	2013-14	2014-15		2012-13	2011-12	2010-11	
Protection for Canadians and Natural Resources	56,020	56,020	59,202	58,051	60,234	55,604	*	*	A safe and secure Canada[39]
Landmass Information	48,117	48,117	44,500	41,888	103,326	90,961	*	*	
Strategic Outcome 3 **Sub-Total**	**104,137**	**104,137**	**103,702**	**99,939**	**163,560**	**146,565**	*	*	

*Actual Spending for 2011-12 reflects that year's PAA structure, for which there were three program activities under Strategic Outcome 3: 3.1 Adapting to a Changing Climate and Hazard Risk Management (Actual Spending for 2011-12 of $50,834,868), 3.2 Natural Resource and Landmass Knowledge and Systems (Actual Spending for 2011-12 of $87,235,443) and 3.3 Geomatics Canada Revolving Fund (Actual Spending for 2011-12 of $444,250).

Actual Spending for 2010-11 reflects that year's PAA structure, for which there were three program activities under Strategic Outcome 3: 3.1 Adapting to a Changing Climate and Hazard Risk Management (Actual Spending for 2010-11 of $60,822,193), 3.2 Natural Resource and Landmass Knowledge and Systems (Actual Spending for 2010-11 of $95,524,071) and 3.3 Geomatics Canada Revolving Fund (Actual Spending deficit for 2010-11 of $253,414).

The difference between Planned Spending and Total Authorities is primarily a result of the funding for the Revitalization of NRCan's Satellite Station Facilities across Canada and the transfer from National Defence for the construction of the Canadian Forces Arctic Training Centre.

Performance Summary Table – For Internal Services ($ thousands)

2012-13 Financial Resources ($ thousands)

	Total Budgetary Expenditures 2012-13	Planned Spending			Total Authorities 2012-13	Actual Spending		
		2012-13	2013-14	2014-15		2012-13	2011-12	2010-11
Internal Services	147,720	147,720	155,862	139,913	187,192	181,093	251,746	308,434
Sub-Total	**147,720**	**147,720**	**155,862**	**139,913**	**187,192**	**181,093**	**251,746**	**308,434**

The difference between Planned Spending and Total Authorities results from increases received in Supplementary Estimates to support internal services where programs have also been increased through Supplementary Estimates and increases resulting from programs paying for internal services in year.

Performance Summary Table – Total Spending ($ thousands)

2012-13 Financial Resources ($ thousands)

	Total Budgetary Expenditures 2012-13	Planned Spending			Total Authorities 2012-13	Actual Spending		
		2012-13	2013-14	2014-15		2012-13	2011-12	2010-11
Strategic Outcomes and Internal Services	2,811,857	2,811,857	2,767,784	2,316,896	2,390,967	1,966,811	3,352,173	4,357,029
Total	**2,811,857**	**2,811,857**	**2,767,784**	**2,316,896**	**2,390,967**	**1,966,811**	**3,352,173**	**4,357,029**

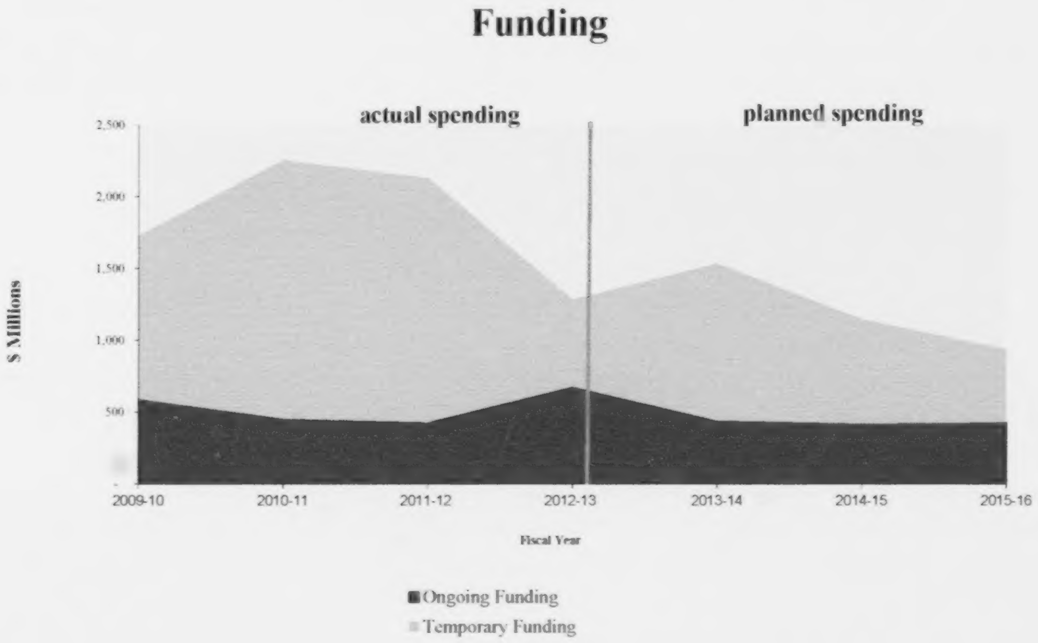
NRCan's Planned Spending of $2.81 billion was adjusted during the year to $2.39 billion to reflect the changes in authorities granted in Budget 2012 and adjustments to statutory items. The overall reduction of $0.42 billion is explained by a combination of increases and decreases. Increases include funding for the Port Hope Area Initiative, Forest Innovation Program and Expanding Market Opportunities Program, Government Advertising Campaign, the Revitalization of NRCan's Satellite Station Facilities across Canada, Isotope Technology Acceleration Program, Major Projects Management Office Initiative, the transfer from National Defence for the construction of the Canadian Forces Arctic Training Centre and an increase with the new statutory item of Crown Share Adjustment Payment for Nova Scotia Offshore Petroleum Resources. Decreases include Budget 2012 Savings Measures, return to the fiscal framework of reprofiled Clean Energy Funds, payments to the Newfoundland Offshore Petroleum Resource Revenue Fund, which were lower than initially forecasted due to decreases in production resulting from the shut-down of oil producing platforms, and payments to the Nova Scotia Offshore Revenue Account, which were lower due to decreases in production resulting from depressed natural gas prices and reduction in operating capacity.

NRCan's Actual Spending of $1.967 billion compared to total authorities of $2.391 billion resulted in a lapse of $424 million, primarily due to lapses in the Grants and Contributions Vote pertaining to the ecoENERGY for Biofuels program, Clean Energy Fund, and the Grant to Sustainable Development Technology Canada's* Next Generation Biofuels Fund and a lapse in the Operating Vote for the Port Hope Area Initiative. These lapses are mainly due to lower-than-anticipated fuel production levels for ecoENERGY for Biofuels, reduced funding requirements from Sustainable Development Technology Canada for the Next Generation Biofuels Fund, reprofiling of funds to future years for the Clean Energy Fund and the Enhancing Competiveness in a Changing Climate Program, and delays in the implementation of the Port Hope Area Initiative. Also various other items were reprofiled in the Operating Vote.

*Sustainable Development Technology Canada (SDTC) is an arm's length organization created by the Government of Canada to demonstrate new technologies to promote sustainable development, including technologies to address issues related to climate change and the quality of air, water and soil.

Expenditure Profile

The graph below illustrates the departmental spending trend for the period 2009-10 to 2015-16, excluding statutory funding. Note that it does not include information from Budget 2013.



NRCan's ongoing funding is holding at a fairly consistent level, although it has seen some reductions through both Strategic Review 2009 and Budget 2012 Savings Measures.

NRCan had a significant spike in temporary funding during the period 2008-09 to 2011-12, resulting principally from programs announced as part of Canada's Economic Action Plan 2009, including the Pulp and Paper Green Transformation Program and the ecoENERGY Retrofit Homes grant program. As these programs have terminated, NRCan's spending trend for programs with temporary funding has declined. Additionally, as the department moves into 2013-14 and future years, other programs (such as Investments in Forest Industry Transformation and the Clean Energy Fund) are scheduled to sunset and other programs (such as ecoENERGY for Biofuels) have declining funding profiles. NRCan recognizes that some of these programs may continue, which—depending on the amount of renewal—could level the spending trend in temporary funding over the period 2012-13 to 2015-16.

NRCan's statutory payments are primarily associated with the offshore agreements between the Government of Canada and the provinces of Nova Scotia and Newfoundland and Labrador. As the majority of the statutory payments are related to revenue, the spending trend for statutory payments fluctuates depending on a number of factors such as production and pricing levels.

NRCan's projected spending profile indicates a declining trend in expenditures after fiscal year 2011-12 as a result of sunsetting funding for Canada's Economic Action Plan initiatives as well as other programs, notably the Pulp and Paper Green Transformation Program ($549.8 million), the ecoENERGY Retrofit – Homes program ($400 million), and the ecoENERGY Technology Initiative ($48.7 million).

Estimates by Vote

For information on NRCan's organizational Votes and/or statutory expenditures, see the *Public Accounts of Canada 2013 (Volume II).* [40]An electronic version of the Public Accounts 2013 is available on the Public Works and Government Services Canada's website[41].

Contribution to the Federal Sustainable Development Strategy

The Federal Sustainable Development Strategy (FSDS) fulfills the requirements of the *Federal Sustainable Development Act*[42], as passed by Parliament in 2008. It outlines the Government of Canada's commitment to improving the transparency of environmental decision-making by articulating its key strategic environmental goals and targets. The FSDS brings together goals, targets, and implementation strategies organized under four themes:

a **Theme I** Addressing Climate Change and Air Quality
w **Theme II** Maintaining Water Quality and Availability
n **Theme III** Protecting Nature
g **Theme IV** Shrinking the Environmental Footprint - Beginning with Government

NRCan contributes to progress in all FSDS themes through its programs as articulated in its Departmental Sustainable Development Strategy. For details on the contribution of programs to sustainable development, consult the departmental website[43].

NRCan plays a key role in delivering on the Government's Clean Air Agenda (CAA)[44] by leading on the clean energy component, as well as contributing to adaptation and international engagement efforts such as the Canada-US Clean Energy Dialogue[45]. In Budget 2011, the Government renewed its commitment to the CAA as part of Canada's Economic Action Plan[46] with a focus on regulatory actions to achieve real emissions reductions while maintaining Canada's economic advantage.

Addressing Climate Change and Air Quality

NRCan supports the goals of this theme, which are to reduce greenhouse gas (GHG) emissions and mitigate the impacts of climate change, as well as to minimize the threats to air quality so that the air Canadians breathe is clean and supports healthy ecosystems. NRCan contributes to GHG mitigation and air quality through the following sub-programs: Forest Products Market Access and Development (1.1.2); Forest Sector Innovation (1.2.2); New Energy Supply (1.3.5); Renewable Energy Deployment (2.1.1); Support for Clean Energy Decision-making (2.1.2); Alternative Transportation Fuels (2.1.3); Energy Efficiency (2.1.4); Materials for Energy (2.2.1); Green Mining (2.2.2); Clean Energy Science and Technology (2.2.3); Forest Ecosystem Science and Application (2.3.1); Climate Change Adaptation (3.1.4); and Essential Geographic Information (3.2.1).

Maintaining Water Quality and Availability

NRCan supports the goals to protect and enhance the quality of water so that it is clean, safe and secure for all Canadians and supports healthy ecosystems through activities under the Radioactive Waste Management sub-program (2.3.4). NRCan also supports the goal to enhance resources in a manner consistent with the sustainability of the resource, through the Groundwater Geoscience sub-program (2.3.2).

Protecting Nature

NRCan supports the goals to maintain productive and resilient ecosystems with the capacity to recover and adapt; and protect areas in ways that leave them unimpaired for present and future generations through the Environmental Studies and Assessment sub-program (2.3.3). NRCan also supports the goal that sustainable production and consumption of biological resources are within ecosystem limits though the Forest Ecosystem Science and Application sub-program (2.3.1).

Strategic Environmental Assessments

During 2012-13, NRCan considered the environmental effects of initiatives subject to the *Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals*[47]. Through a strategic environmental assessment process, 38% of departmental initiatives were found to contribute to the above FSDS themes, goals and targets, with the majority contributing to themes I, III and IV. The remaining 62% were not applicable to the FSDS.

NRCan's web site offers more information on strategic environmental assessments[48] and activities[49] that support sustainable development. Complete information on the FSDS can be found on the Environment Canada website[50].

Section II: Analysis of Programs and Sub-Programs by Strategic Outcomes

This section provides performance information on the delivery of programs that contributed to NRCan's strategic outcomes (SO) and priorities in 2012-13.

More information about these programs, as well as supporting evidence from internal evaluation and audit reports, can be found on the Department's website[51].

Strategic Outcome I

1- Canada's Natural Resource Sectors are Globally Competitive

- **1.1 Market Access and Diversification**
- **1.2 Innovation for New Products and Processes** ⓐ
- **1.3 Investment in Natural Resource Sectors**
- **1.4 Statutory Programs – Atlantic Offshore**

Description: Canada is a major producer and exporter of natural resources. Being competitive in Canadian and foreign markets is imperative to the nation's economic growth. The objective of this Strategic Outcome (SO) is to help Canada's natural resource sectors become more globally competitive by adapting to the continuously changing conditions of success. This will be achieved by supporting the natural resource sectors to expand and diversify their markets to respond to the high demand from emerging economies, and diversify their product offerings to remain innovative and competitive.

Performance Results – Strategic Outcome I

Performance Indicator	Actual Result
Canada's rank in trade as measured by Canada's Trade Performance Index (TPI)* for wood, wood products and paper relative to all nations; units are rank position	Canada's ranking relative to other countries decreased between 2007 and 2011 with respect to wood, wood products and paper. The economic situation in the United States, which is the number one destination for Canadian wood products and where GDP growth averaged only 0.2% during that period, led to a reduction of wood product exports and explains the relative decline of Canada's performance. Source: International Trade Centre of United Nations Conference on Trade and Development/World Trade Organization.
Canada's rank in trade as measured by Trade Performance Index (TPI) for minerals (includes energy and power) relative to all nations; units are rank position	Canada's share of the world market for minerals, energy and power decreased to 3.8%, from 4.5% between 2007 and 2011. This decline resulted from the emergence of China and other fast-growing Asian countries as natural resource suppliers. However, as reflected in program 1.1., Market Access and Diversification, the value of Canadian domestic exports of natural resource products increased by 54% between 2003 and 2012. It now represents 52% of all domestic merchandise exports. Comparatively, domestic exports of goods not associated with the natural resource sectors fell by 3% during the same period. Source: International Trade Centre of United Nations Conference on Trade and Development/World Trade Organization.

*The Trade Performance Index (TPI) is defined and reported by the International Trade Centre (ITC) of the United Nations Conference on Trade and Development (UNCTAD) and World Trade Organization (WTO).

Performance Analysis

Changing global conditions, including the economic recession and the emergence of new markets, have resulted in the need for Canada to further enhance the global competitiveness of its natural resource exports. To this end, NRCan undertook a number of activities, from identifying and leveraging opportunities in new markets (e.g., China, India) to fostering innovation for the development of a more diversified product mix to encouraging investment opportunities in Canada's natural resource sectors.

Despite these activities, NRCan did not meet its 2012-13 targets for Canada's ranking relative to other nations as per the Trade Performance Index. The results show that Canada's ranking decreased slightly between 2007 and 2011. However, efforts at the program level have led to key achievements that contribute to the global competitiveness of Canada's natural resource exports.

Program 1.1: Market Access and Diversification

Description: Canada's natural resource sectors face two key barriers to market access and diversification: 1) trade and policy barriers, and 2) lack of awareness of Canada's natural resource products. The objectives of this program are to break down those barriers and support natural resource markets by making information available to Canadians, supporting negotiations to reduce trade barriers, and ensuring that regulations are up-to-date. This helps maintain natural resource sectors' access to existing markets and increases their access to new market segments. Progress towards this program was achieved through the delivery of four sub-programs.

1.1 Market Access and Diversification

1.1.1 Mineral and Metal Markets Access and Development

1.1.2 Forest Product Market Access and Development ⓐ

1.1.3 Energy Market Regulation and Information

1.1.4 International Opportunities for Canadian Earth Sciences

Financial Resources – For Program 1.1 ($ thousands)

Total Budgetary Expenditures 2012-13	Planned Spending 2012-13	Total Authorities 2012-13	Actual Spending 2012-13	Difference* 2012-13
28,258	28,258	57,374	55,420	(27,162)

*The difference between Planned Spending and Actual Spending is mainly attributed to the funding received in Supplementary Estimates, increased policy work related to energy regulations, additional expenditures for radioactive waste management programs (Property Value Protection grant program oversight and historic waste clean-up activities), and expenditures related to AECL Restructuring. In addition, Actual Spending included expenditures related to the settlement of collective agreements and severance pay, and one time payments for workforce adjustment, which were not included in Planned Spending. Some expenditures planned for program 1.1 Market Access and Diversification were subsequently spent in program 1.3 Investment in Natural Resources and some funding for overhead was transferred to Internal Services.

Human Resources – (Full-Time Equivalent – FTEs)* – For Program 1.1

Planned 2012-13	Actual 2012-13	Difference 2012-13
222	230	(8)

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Program 1.1

Expected Result	Performance Indicator	Target	Actual Result
Natural resource sectors have increased access to markets and new markets segments	Natural resource sectors have access to markets and new markets segments as defined by domestic exports of energy products, minerals and metal products and forestry products	Favourable 10 year trend by March 31, 2013	The value of domestic exports of natural resource products increased by 54% between 2003 and 2012. It now represents 52% of all domestic exports. Comparatively, domestic merchandise exports of goods not associated with the natural resource sectors fell by 3% during the same period. Source: Statistics Canada.
	Canadian direct investment abroad	Favourable 10 year trend by March 31, 2013	The stock of Canadian investment abroad increased by 127% between 2003 and 2012. Source: Statistics Canada, CANSIM (Canadian Socio-economic Information Management System) Table 376-0052.

Performance Analysis and Lessons Learned

Increasing market access for Canadian natural resource exports is necessary for ensuring global competitiveness. NRCan helped increase market access through a number of activities undertaken at the sub-program level, such as increasing awareness of mineral exploration opportunities, diversifying markets for forest products, reducing regulatory barriers for energy exports, and increasing opportunities for Canada's earth sciences. These activities supported performance results at the program level, which show that the value of domestic exports of natural resource products increased by 54% and the value of Canadian direct investment abroad increased by 127% between 2003 and 2012.

Sub-Program 1.1.1: Mineral and Metal Markets Access and Development

Description: Canadian mineral and metal producers require access to export markets. Domestic production exceeds domestic demand for many commodities, so tariffs and non-tariff barriers can constrain output. Returns to producers and government revenues can also be reduced by both policies and measures that reduce demand for minerals, metals and products containing metals or certification schemes that discriminate against Canadian producers. This sub-program administers the *Export and Import of Rough Diamonds Act and Regulations* that implement Canada's international obligations under the Kimberley Process Certification Scheme and ensure market access for Canadian diamond producers and users.

Financial Resources – For Sub-Program 1.1.1 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
2,443	439	2,004

*The difference between Planned Spending and Actual Spending is mainly attributed to expenditures originally planned for sub-program 1.1.1 Mineral and Metal Markets Access and Development which were subsequently spent in sub-program 1.3.1 Mineral Investment.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 1.1.1

Planned 2012-13	Actual 2012-13	Difference 2012-13
23	2	21

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 1.1.1

Expected Result	Performance Indicator	Target	Actual Result
Businesses have increased opportunities for trade in goods and services related to minerals and metals	Mineral and metal exports as a percentage of mineral and metal production value (including coal exports and production from imported feeds)	Stable or growing by March 31, 2013	Mineral and metal exports (including iron ore and coal, but excluding aluminum, iron and steel) grew as a percentage of mineral and metal production (including production from imported feeds) over the period from 2003 to 2012. Preliminary figures for 2012 indicate a return to 2010 values, the second highest of the period. Source: NRCan's Trade Retrieval and Aggregation System.

Performance Analysis and Lessons Learned

The positive trend in Canadian exports of natural resources was supported in part by a corresponding increase in mineral and metal exports (e.g., iron ore) for the same period (i.e., 2003-2012). Notable achievements that contributed to this increase in 2012-13 include the Minister's trade Mission to India, and NRCan's issuance of 284 certificates for the export of rough diamonds under the Kimberly Process.

An evaluation of mineral and metal programs related to markets, innovation and investment (sub-programs 1.1.1, 1.2.1 and 1.3.1) confirmed that the programs are highly relevant and aligned with federal government priorities and federal roles and responsibilities. The evaluation further confirmed that the programs are making considerable progress towards achieving outcomes related to generating and transferring S&T knowledge and information to external stakeholders.

Sub-Program 1.1.2: Forest Products Market Access and Development

Description: Canada's forest sector relies heavily on a single market (the United States) for exports of commodity forest products (mainly wood used in residential construction). But in the face of growing global competition, it can no longer rely solely on traditional markets and/or traditional end-uses of products to remain competitive. Canada must develop opportunities for new forest products and end-uses in existing markets, and diversify markets to expand sales. It must also reduce barriers to market access posed by trade restrictions, tariffs, regulations as well as misconceptions of the strong environmental record of Canada's forest sector and its products. Through this sub-program, NRCan provides financial contributions to Canadian forest industry associations to support initiatives aimed at expanding exports to international markets and increasing the use of wood in North American non-residential construction. It also provides financial contributions and science-based information to industry partners to support the development and dissemination of information products aimed at promoting the environmental reputation of Canada's forest sector in international markets. This sub-program also provides expertise to other federal departments in support of Canada's international negotiating positions on key trade and environmental issues, and analysis that influences policy decisions on key competitiveness opportunities.

Financial Resources – For Sub-Program 1.1.2 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
7,147	26,413	(19,266)

*The difference between Planned Spending and Actual Spending is mainly attributed to the funding received in Supplementary Estimates related to the Expanding Market Opportunities Program.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 1.1.2

Planned 2012-13	Actual 2012-13	Difference 2012-13
59	65	(6)

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 1.1.2

Expected Result	Performance Indicator	Target	Actual Result
Increased sales of Canadian wood products in international markets and new market segments	Dollar value of wood product sales in targeted offshore markets (China, Korea, Japan and Europe (EU 27)) and other new emerging markets (e.g., India, Middle East)	10% increase in dollar value relative to base year value in 2007 offshore markets ($2.471 billion) by March 31, 2013	In 2012, Canadian wood product exports to offshore markets reached $3.4 billion, an increase of 38% from 2007 levels. To further diversify Canadian wood sales, Canada is also exploring opportunities in new emerging markets (e.g., India and the Middle East). Source: World Trade Atlas, Global Trade Atlas, wood imports from targeted offshore markets.
	Dollar value of wood products used in non-residential construction projects built with wood as opposed to traditional means (North America)	10% increase in dollar value relative to base year value in 2007 ($25 million) by March 31, 2013	In 2012-13, the Expanding Market Opportunities Program helped support the conversion of 109 projects to using more wood in structural and interior designs, representing $85 million of new wood sales for the North American wood products sector. This is well above the $25 million target. Source: Trimestrial reports from WoodWorks Canada, and WoodWorks United-States.
	Diversity value of wood products	Favorable 5 year trend by March 31, 2013	The diversification of Canada's export markets for wood products increased significantly between 2007 and 2012, as measured by the Herfindahl Index. The index fell to 0.46 in 2012 compared to 0.67 in 2007, an improvement of 30%. A reduction in the value of the index corresponds to greater diversification of exports. The closer the value is to 0, the more a country has diversified its export markets and lessened its reliance on one main market. Of note, the index was at 0.397 in 2011. This was in part due to weaker demand in China as a result of a softening Chinese economy and increased demand in the United States due to a rebound in residential housing. Source: World Trade Atlas.

Expected Result	Performance Indicator	Target	Actual Result
Positive perception of Canadian forest practices and products among targeted stakeholders in key international markets	Percentage of targeted stakeholders who have a positive perception of Canadian forest practices and products	Majority (51%) of targeted stakeholders have positive perceptions by March 31, 2013	No survey to measure stakeholder perception of Canadian forest products and practices was completed in 2012-13. Questions on these topics will be integrated in a stakeholder survey, to be carried out in 2013-14. Source: Annual or bi-annual survey of forest stakeholders on their perceptions of Canadian forest products (survey to be conducted by the Forest Product Association of Canada).

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[52].

Performance Analysis and Lessons Learned

In 2012-13, Canadian wood product exports to offshore markets reached $3.4 billion, which represents an increase of 38% from 2007 levels. NRCan contributed to this increase by signing contribution agreements valued at $7.6 million through the Expanding Market Opportunities Program, to develop offshore markets. Additionally, NRCan supported Ministerial Trade Missions to Japan and South Korea in 2012. The Department also signed a Memorandum of Understanding (MOU) with the Chinese Ministry of Housing and Urban-Rural Development to determine ways that Canada and China can cooperate on the development of eco-cities in China.

ⓐ NRCan's efforts to expand opportunities in new and emerging markets were supplemented by efforts to diversify end uses for wood products in traditional markets, such as the United States. Through the Expanding Market Opportunities Program, NRCan signed contribution agreements valued at $3.3 million to support research for building code changes and the promotion of greater use of wood in non-residential and mid-rise applications in North America. This contributed to $85 million in new wood sales, which is well above the $25 million target. These efforts supported Goal 1 (Climate Change) and target 1.1 (Climate Change Mitigation) of the 2010-13 FSDS.

Sub-Program 1.1.3: Energy Market Regulation and Information

Description: Canada's rich energy resources are an important source of wealth and employment, and energy exports significantly contribute to Canada's trade. Securing these benefits requires regular assessment and monitoring of Canadian energy resources, infrastructure and regulations. This sub-program aims to foster a competitive Canadian energy sector by working with provinces and territories to articulate Canada's approach to the management of energy resources, engaging industry and regulatory authorities to renew energy regulations as needed (e.g. offshore oil and gas, pipelines, nuclear, etc.), and promoting energy literacy among Canadians. To achieve these goals, this sub-program assesses and updates (if necessary) federal energy regulations and policies, engages domestically and internationally on energy issues, and provides Canadians with information on energy markets.

Financial Resources – For Sub-Program 1.1.3 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
18,668	28,558	(9,890)

*The difference between Planned Spending and Actual Spending is mainly attributed to increased policy work related to energy regulations, additional expenditures for radioactive waste management programs (Property Value Protection grant program oversight and historic waste clean-up activities). Additionally, expenditures related to AECL Restructuring, the settlement of collective agreements and severance pay (which was not included in Planned Spending), and one-time payments for workforce adjustment explain some of the difference.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 1.1.3

Planned 2012-13	Actual 2012-13	Difference 2012-13
140	163	(23)

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 1.1.3

Expected Result	Performance Indicator	Target	Actual Result
Greater collaboration between federal, provincial, territorial governments on energy issues	Priorities, as identified by energy ministers, are completed on time	By September 11, 2012	NRCan facilitated greater collaboration on energy issues among federal, provincial and territorial (FPT) governments to provide direction for officials' work on shared energy priorities. These efforts culminated in a successful 2012 Energy and Mines Ministers' Conference (EMMC) in September 2012, where ministers discussed progress and offered direction for further work leading to the next EMMC meeting in August 2013. Source: Record of decision from Energy and Mines Ministers' Conference.
Public and other stakeholders - both domestic and international - have access to information about Canada's energy resource markets and regulations	Number of website hits and requests for publications	Maintain level of website traffic and publication requests by March 31, 2013 (Baseline to be determined in 2011-12)	Web tracking during 2012-13 indicated that user interest in Canada's energy resource markets and regulations remained high in comparison to the previous year. For example, the Fuel Focus websites were ranked as NRCan's seventh most viewed web pages by the public. About 50% of the Energy Sector's (excluding the Office of Energy Efficiency, which has its own website) top 20 viewed pages were from the Fuel Focus website and 60% of the 50 most downloaded pages were related to Fuel Focus issues. In addition, Fuel Focus was downloaded 4,148 times between April 1, 2012, and March 31, 2013. Source: Web Trends records of publications downloaded and website traffic.
The Government of Canada's regulatory framework governing Canada's energy resources (e.g. pipelines, frontier lands and offshore oil and gas) is renewed and continuously improved	Assessment and/or update to energy regulations	1 by March 31, 2013	The *Crown Share Adjustment Payments Regulations* were published in the Canada Gazette and the *Drilling and Production Regulations* were analyzed to address the Standing Joint Committee on the Scrutiny of Regulation's concerns. Source: Canada Gazette.

Performance Analysis and Lessons Learned

NRCan continued to facilitate opportunities for increasing the competitiveness and export of Canada's energy products by leveraging domestic and international partnerships. These efforts also supported the positive trend in the export of Canadian natural resource products. Domestically, NRCan represented Canada's interests and collaborated with provinces and territories on shared energy priorities, which culminated in a successful 2012 Energy and Mines Ministers' Conference. Furthermore, NRCan used its regulatory authorities to strengthen Canada's energy resource regulatory framework by advancing work on the Crown Share Adjustment Payments Regulations and the Drilling and Production Regulations.

Internationally, NRCan engaged with the United States to strengthen the partnership on energy resources. The Department also continued efforts to minimize discriminatory measures relating to the European Union's Fuel Quality Directive. NRCan also supported bilateral meetings with Poland and Israel to strengthen relations and cooperation. The former focused on advancing energy security, environmental sustainability, energy efficiency and renewable energy. The latter focused on offshore development, new sources of oil and gas supplies, and renewable energy.

In Asia, NRCan worked to strengthen key partnerships with growing economies. For example, NRCan hosted the Canada-China Joint Working Group on Energy Cooperation and supported a number of ministerial missions, including to Japan, South Korea and India. The mission to India laid the groundwork for Prime Minister Harper's visit to India in November 2012 to announce the launch of an energy dialogue between NRCan and India's Planning Commission as well as other key energy deliverables, such as a memorandum on oil and gas. The Department also leveraged multilateral fora (e.g., Asia-Pacific Economic Cooperation Energy Ministers' Meeting, International Energy Agency) to promote Canada as a reliable and responsible supplier of natural resources.

Sub-Program 1.1.4: International Opportunities for Canadian Earth Sciences

Description: Without the initial presence of the Canadian Government, Canadian earth sciences industry and related stakeholders have difficulty securing international opportunities in geoscience and geomatics. NRCan implements projects or studies with international entities to demonstrate Canadian expertise and know-how which can be used to support sound policies/decisions concerning natural resource development. As a result of this positioning of Canadian earth sciences internationally, foreign market opportunities are increased for Canadian industry and related stakeholders.

Financial Resources – For Sub-Program 1.1.4 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
0	11	(11)

*The difference between Planned Spending and Actual Spending is primarily related to operating costs not originally planned for in this sub-program.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 1.1.4

Planned 2012-13	Actual 2012-13	Difference 2012-13
0	0	0

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 1.1.4

Expected Result	Performance Indicator	Target	Actual Result
Increased awareness by international parties/ organizations on the expertise/know-how of Canadian earth sciences industry and related stakeholders	Number of earth sciences related tools or standards adopted by international parties/organizations	2 by March 31, 2013	The Department completed the Senegal National Geomatics Framework, to position Canadian geomatics technologies and policies in a critical geospatial development, and the India Landslide Study, to position Canadian earth sciences technologies in landslide in-situ monitoring and remote sensing capabilities to monitor geohazards. Source: Annual Program Performance Reports

Performance Analysis and Lessons Learned

This sub-program ended on March 31, 2013. The two remaining projects— Senegal National Geomatics Framework and India Landslide Study—were delivered. In relation to the first project, Prime Minister Harper presented the National Plan during a visit to Senegal. In relation to the second project, landslide monitoring through in-situ and remote sensing capabilities were outlined.

Program 1.2: Innovation for New Products and Processes

Description: Optimizing the use of Canada's natural resources and the processes by which they are developed would improve the productivity of the natural resources sectors and reduce its dependency on the sale of traditional natural resource products. The objective of this program is twofold: to maximize the productivity and to decrease our dependency on the sale of traditional products by encouraging natural resource sectors to adopt new technologies and processes to develop new products. The objective is achieved by conducting science, research, development, and demonstrations on new applications, technologies, processes and products. Progress towards this program was achieved through the delivery of three sub-programs.

1.2 Innovation for New Products and Processes

1.2.1 Mining Innovation

1.2.2 Forest Sector Innovation ⓐ

1.2.3 Geomatics Innovation

Financial Resources – For Program 1.2 ($ thousands)

Total Budgetary Expenditures 2012-13	Planned Spending 2012-13	Total Authorities 2012-13	Actual Spending 2012-13	Difference* 2012-13
71,292	71,292	99,731	93,948	(22,656)

*The difference between Planned Spending and Actual Spending is mainly attributed to the funding received in Supplementary Estimates related to the Forest Innovation Program, a transfer from program 2.2 Technology Innovation, a transfer to program 3.2 Landmass Information and Budget 2012 Savings Measures. Some funding for overhead was transferred to Internal Services.

Human Resources – (Full-Time Equivalent – FTEs)* – For Program 1.2

Planned 2012-13	Actual 2012-13	Difference 2012-13
319	280	39

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Program 1.2

Expected Result	Performance Indicator	Target	Actual Result
Natural resource sectors increase production of new products and processes as a result of NRCan information	Number of new products and processes resulting from NRCan information	5 by March 31, 2013	Seven new products and processes were developed using NRCan information. Source: Annual Program Performance Reports.
	Research and development (R&D) expenditures in natural resource sectors as defined by total intramural R&D expenditures in energy, mining and forestry sectors	Favourable 10 year trend	R&D expenditures in the natural resource sectors experienced a positive upward trend from 2003 to 2007. This trend leveled off in 2008 and began a gradual decline from then onwards. This is consistent with trends in R&D expenditures for the overall Canadian economy. Overall, the expenditure level in the natural resource sectors increased by 43% between 2003 and 2012, compared to an increase of 10% for the total economy. Source: Statistics Canada
Public and private sector organizations have increased cost-efficiency or productivity resulting from the integration of geomatics or geoscience policies, tools and frameworks	Number of citations of cost-efficiency and productivity gains in public or private sector organizations	5 by March 31, 2013 (Baseline to be determined in 2011-12)	Five citations of NRCan's geoscience and geospatial information were made, demonstrating in many instances increased productivity or cost-efficiency in private, public and academic institutions. Source: Annual Program Performance Reports.

Performance Analysis and Lessons Learned

Innovation plays a key role in supporting the competitiveness of Canada's natural resource exports. In 2012-13, NRCan undertook targeted efforts at the sub-program level to foster innovation in mining, forestry and geomatics. In particular, the Department provided expertise to industry stakeholders in these areas. Results at the program level indicate that the expertise provided by NRCan was used to develop 7 new products or processes in 2012-13, which exceeds the target of 5. NRCan also met the target relating to the number of citations of cost-efficiency and productivity gains in public and private sector organizations. For example, citations were made by Canada North Environmental Services, Manitoba Hydro and Environment Canada. R&D expenditures in the natural resource sectors also increased by 43% between 2003 and 2012.

Sub-Program 1.2.1: Mining Innovation

Description: Increased innovation is needed to improve the productivity and competitiveness of Canadian mines, smelters and refineries. Canada's capacity for mining innovation has reached a critical level as a result of declining enrolment in university programs and changes in industry structure. Mining research is fragmented and focused on shorter-term, lower-risk projects to improve existing processes. The time and effort required to develop and commercialize breakthrough technologies and the associated risks are substantially greater. This program conducts coordinated research to address priorities identified by stakeholders, including the Canada Mining Innovation Council, industry, academics, technology developers and representatives of provincial and territorial governments. A collaborative approach reduces financial risks for industry partners and ensures that program priorities are aligned with business needs.

Financial Resources – For Sub-Program 1.2.1 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
3,542	6,414	(2,872)

*The difference between Planned Spending and Actual Spending is mainly attributed to expenditures related to supporting the renewal and relocation of the laboratory from Ottawa to Hamilton, originally planned for sub-program 2.2.1 Materials for Energy, that were subsequently spent in sub-program 1.2.1 Mining Innovation.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 1.2.1

Planned 2012-13	Actual 2012-13	Difference 2012-13
52	36	16

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 1.2.1

Expected Result	Performance Indicator	Target	Actual Result
Technology developers increase demonstration of innovative mining and processing technologies	Number of demonstration projects	2 (total over 5 years) by March 31, 2017	In 2012-13, one demonstration project was completed related to hoisting monitoring technologies. Other technologies are under development and NRCan is confident that another demonstration project will be delivered by 2017. Source: Meritus Information System.
Industry partners increase financial and in-kind contributions	Value of financial and in-kind contributions by industry partners collaborating with NRCan on mining and processing research	10% increase over 3-year baseline of $4.0 million by March 31, 2015	In 2012-13, the value of financial and in-kind contributions reached $1.9 million. NRCan is on track to meet this target by March 2015. Source: Meritus Information System.
Academic, government and other non-industry partners increase financial and in-kind contributions	Value of financial and in-kind contributions by academic, government and other non-industry partners collaborating with NRCan on mining and processing research	10% increase over 3-year baseline of $750,000 by March 31, 2015	In 2012-13, the value of financial and in-kind contributions reached $437,000. NRCan is on track to meet this target by March 2015. Source: Meritus Information System.

Performance Analysis and Lessons Learned

In 2012-13, NRCan supported technological innovation in the mining sector by completing a demonstration project relating to hoisting monitoring technologies at IAMGOLD's Westwood in the Abitibi region. A manufacturer will commercialize the technology under the trademark Contiscan. The technology developed will now be used for projects that utilize innovative synthetic ropes instead of conventional steel ropes. NRCan also developed the first laboratory test protocol of the dynamic behaviour of friction bolts, which are used to stabilize rock excavations, and undertook proof of concept of borehole breakout analysis to determine stress of rockmass at greater depths in order to maintain worker safety, opening stability, and the sustainability of mining-at-depth. The value of financial and in-kind contributions by industry partners collaborating with NRCan on mining and processing research reached $1.9 million, demonstrating progress towards longer-term targets of increasing in-kind contributions by industry and other partners.

Sub-Program 1.2.2: Forest Sector Innovation

Description: Canada's forest sector, traditionally the world's largest exporter of forest products, has experienced a decrease in its market share as a result of changing global and regional demand and increasing competition. To regain its competitive position, the sector must focus on innovation (i.e., research, development and deployment) that generates more value from Canada's forests than it did in the past. This will allow the sector to move away from a traditional volume-based commodity focus towards a more diversified mix of higher-value specialized products, processes and technologies that will compete profitably in a wider array of markets. To accelerate innovation in the forest sector, an integrated national forest sector innovation system is needed. Through this sub-program, NRCan provides leadership in Canada's forest sector innovation system by bringing governments, industry and research institutions together in a working partnership to focus on collectively identifying, funding, and delivering the innovation priorities of the sector. NRCan also conducts research and provides financial contributions to FPInnovations, other forest sector research partners, and eligible forest products companies to research, develop, and deploy new products, processes and technologies. This sub-program includes Investments in Forest Industry Transformation program (IFIT).

Financial Resources – For Sub-Program 1.2.2 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
56,608	79,850	(23,242)

*The difference between Planned Spending and Actual Spending is mainly attributed to the funding received in Supplementary Estimates related to the Forest Innovation Program, as well as a reduction related to Budget 2012 Savings Measures

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 1.2.2

Planned 2012-13	Actual 2012-13	Difference 2012-13
194	197	(3)

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 1.2.2

Expected Result	Performance Indicator	Target	Actual Result
Increased number of higher-value Canadian forest products, processes and technologies (i.e.,	Number of new higher-value Canadian forest products, processes and technologies produced	10 per year by March 31, 2013	More than 10 products, processes or technologies have been produced. Source: Internal reports, FPInnovations research reports.

Expected Result	Performance Indicator	Target	Actual Result
more diversified product mix and more efficient processes)			
Common priorities are pursued by partners in forest sector innovation system	Number of partners pursuing commonly established forest sector priorities	3 (which is a positive trend from current baseline of 2) by March 31, 2013	Three partners—government, industry and academia—pursued commonly established forest sector priorities for the reporting period. Source: FPInnovations strategic and, annual plans Canadian Council of Forest Ministers work plans Provincial/Territorial budgets, work plans, reports Forest Product Association of Canada (FPAC) reports and work plans StatsCan Survey.

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[53].

Performance Analysis and Lessons Learned

NRCan exceeded the target of producing 10 forest products, process or technologies to support technological innovation in the sector in 2012-13. NRCan funded one such project through the Transformative Technologies Program (TTP), which resulted in a new process to isolate cellulose filaments in wood fibre to strengthen paper products. Similarly, the IFIT Program funded six new high-value technologies at forest products facilities, including two advanced bio-technology processes.

Through IFIT, NRCan also supported the commercial implementation of three advanced technologies. The work conducted through IFIT supported Goal 1 (Climate Change) and target 1.1 (Climate Change Mitigation) of the 2010-13 FSDS. An audit of the IFIT Program found that NRCan has implemented an effective governance framework and that the program is administered with due diligence and transparency in accordance with the approved terms and conditions. One recommendation was to further strengthen the implementation of improved monitoring measures on recipients benefiting from advance payments.

NRCan's Canadian Wood Fibre Centre (CWFC) enhanced forest inventory tools to provide forest managers with the knowledge to better predict fibre supply to optimize harvest and mill operations. The CWFC also developed hardwood optimization tools, enabling forest managers to take advantage of value-enhancing opportunities while increasing the economic potential and long-term sustainability of eastern hardwood forests. NRCan also met its target relating to the pursuit of commonly established forest sector priorities. These priorities were reflected in the projects undertaken by FPInnovations through the TTP and CWFC. FPInnovations was also integral to the operation of the eight forest sector R&D networks, which conduct university-based research to ensure their alignment with forest sector priorities.

Sub-Program 1.2.3: Geomatics Innovation

Description: The emergence of mass-market distribution systems, such as mobile devices, has dramatically increased the demand and profile of location-based data and technology. However, such Geographic Information Systems (GIS) and other location-enabled applications are dependent on standardized, up-to-date and accurate location-based information. This program delivers architecture, standardization and application policies and expertise in order to enable the natural resources sector to create innovative, value-added applications used for example in the management of forests, determining the slope for pipeline location and elevation modelling used in dam construction. The use of NRCan's location-based knowledge in a wide variety of value-added applications can stimulate economic growth and productivity, enabling these sectors to be more competitive.

Financial Resources – For Sub-Program 1.2.3 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
11,141	7,684	3,457

*The difference between Planned Spending and Actual Spending is partly attributed to Budget 2012 Savings Measures, and expenditures originally planned for sub-program 1.2.3 Geomatics Innovation that were subsequently spent in sub-program 3.2.1 Essential Geographic Information.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 1.2.3

Planned 2012-13	Actual 2012-13	Difference 2012-13
73	48	25

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 1.2.3

Expected Result	Performance Indicator	Target	Actual Result
Adoption of national or international geospatial policies, standards or frameworks	Number of national frameworks adopted, enhancing pan-Canadian interoperability of geo-applications, tools and data	2 by March 31, 2014	Two national data layer standards will be delivered by March 31, 2014: the National Railway Network (NRWN), and the National Power Line Network (NPLN). These data layers are developed on a common standard, promoting consistency on a national scale and can be applied to a variety of needs for Canada's natural resource sectors and others, such as the Multi-Agency Situational Awareness System (MASAS). The standardized NRWN data layer is publicly available through GeoBase. The NRWN is now available along with railway data sets from seven provinces and territories. The NPLN model is now available on the GeoBase portal. However, securing publishing rights (copyright) from the respective provincial owners of these data is ongoing. NRCan will continue to work with the data providers to secure access rights and deliver this data layer in 2013-14. Source: Annual Program Performance Reports.

Performance Analysis and Lessons Learned

In 2012-13, NRCan contributed to Geomatics innovation through the development of geospatial standards, policies and frameworks, technological solutions and collaboration.

NRCan is on track to deliver two national geospatial data layer standards. In 2012-13, the department released a variety of technological solutions through its delivery of open data, tools and related technology, including customized data information catalogues, in an accessible and reusable format for use in a broad variety of business or government applications.

NRCan is furthering its work on the development of geospatial policy, standards and frameworks by spearheading a research project that examines the value of geospatial information to Canadians.

The Department's GeoConnections Program developed a Spatial Data Infrastructure (SDI) assessment framework. Through a third-party assessment of the Canadian Geospatial Data Infrastructure (CGDI), the CGDI's overall roadmap and a strategic framework for standards were developed to better coordinate and integrate geospatial standards in Canada. An example of early success is the Open Geospatial Consortium Interoperable data framework technology which was used to develop the Climate-Hydrologic Information Sharing tool. This collaborative tool is an innovative virtual observatory system for publishing water resources information collected from observations and forecasts in the U.S. and Canada.

Program 1.3: Investment in Natural Resource Sectors

Description: Investing in the development of natural resources is costly and risky due to the uncertainties related to the potential economic viability of natural resources. There are many factors to consider when deciding whether or not to develop a natural resource – such as investors and/or companies lacking knowledge on, and thus, being unaware of potential opportunities, or regulatory delays and uncertainty impeding the investment climate. The objective of this program is to encourage natural resource sector investment by either decreasing the risk of development, or increasing knowledge on opportunities. This objective is achieved by advancing federal system-wide regulatory improvements and providing funding and information on the factors that determine the potential economic viability of natural resources. Progress towards this program was achieved through the delivery of six sub-programs.

1.3 Investment in Natural Resource Sectors

- **1.3.1 Mineral Investment**
- **1.3.2 Forest-based Community Partnerships**
- **1.3.3 Targeted Geoscience Initiative 4 (TGI 4)**
- **1.3.4 Geo-mapping for Energy and Minerals**
- **1.3.5 New Energy Supply** ⓐ
- **1.3.6 Major Projects Management Office Initiative**

Financial Resources – For Program 1.3 ($ thousands)

Total Budgetary Expenditures 2012-13	Planned Spending 2012-13	Total Authorities 2012-13	Actual Spending 2012-13	Difference* 2012-13
74,618	74,618	74,985	73,319	1,299

*The difference between Planned Spending and Actual Spending is largely attributed to Budget 2012 Savings Measures, lapsing of funds at year end, a transfer from program 1.1 Market Access and Diversification, and transfers to programs 3.1 Protection for Canadians and Natural Resources and 3.2 Landmass Information. In addition, Actual Spending included expenditures related to the settlement of collective agreements, severance pay and one-time payments for workforce adjustment, which were not included in the Planned Spending. Some funding for overhead was transferred to Internal Services.

Human Resources – (Full-Time Equivalent – FTEs)* – For Program 1.3

Planned 2012-13	Actual 2012-13	Difference 2012-13
492	467	25

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Program 1.3

Expected Result	Performance Indicator	Target	Actual Result
Natural resource have increased investment	Natural resource sectors have increased investment	NRCan capital investments in forest, energy, minerals and metals sectors	Over the past 5 years, capital expenditures in the natural resource sectors grew an average of 7.1% per year. This is above the average annual growth rate of 2.2% for the part of the Canadian economy not related to natural resources. Source: Statistic Canada - Cansim # 029-0005 "Capital and repair expenditures, by sector and province, annual (dollars).

Performance Analysis and Lessons Learned

Investments in the development of Canada's natural resource sectors are essential for the global competitiveness of exports. NRCan supported investments by helping to address the risks of development while increasing knowledge of potential opportunities. In particular, the Department conducted a number of activities through sub-programs that focused on mineral exploration, forestry and new energy supply. Moreover, the Major Projects Management Office helped to improve the regulatory framework for major project reviews through the development and implementation of the Government's plan for Responsible Resource Development. Results at the program level indicate that over the past 5 years, capital expenditures in natural resource sectors grew an average of 7.1% per year. This is well above the average annual growth rate of 2.2% registered by the remaining part of the Canadian economy. NRCan's ongoing targeted efforts in each sector in 2012-13 contributed to this performance.

Sub-Program 1.3.1: Mineral Investment

Description: Canada must compete for mineral investment because capital is mobile and flows to countries that offer attractive risk-adjusted returns for investors. Mineral exploration creates opportunities for Canadians and can lead to increasing investments and resource rents over the medium-term. To calibrate policies that affect mineral investment, governments need sector-specific information on mineral exploration and mine development activities. Tracking exploration activities is difficult because there are thousands of exploration companies and projects, with new companies being continually created while others become inactive. This sub-program addresses this information gap by collecting socioeconomic data on mineral exploration, deposit appraisal and mine complex development expenditures, physical output from production facilities and the value of mineral production and trade.

Financial Resources – For Sub-Program 1.3.1 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
8,450	12,819	(4,369)

*The difference between Planned Spending and Actual Spending is mainly attributed to expenditures originally planned for sub-program 1.1.1 Mineral and Metal Markets Access and Development which were subsequently spent in sub-program 1.3.1 Mineral Investment. In addition, Actual Spending included expenditures related to the settlement of collective agreements and severance pay, which was not included in the Planned Spending, as well as one time payments for work force adjustment.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 1.3.1

Planned 2012-13	Actual 2012-13	Difference 2012-13
83	96	(13)

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 1.3.1

Expected Result	Performance Indicator	Target	Actual Result
Industry decision-makers fund mineral exploration in Canada	Ranking of planned nonferrous base metals exploration spending in Canada by companies reporting an annual budget of at least US$100,000	Third or better in global ranking by March 31, 2013	Based on data from the SNL Metals Economics Group, Canada was the top country destination for budgeted nonferrous exploration expenditures in 2012. Source: Metals Economics Group, Corporate Exploration Strategies.

Performance Analysis and Lessons Learned

Results for 2012 show that Canada was the top country destination for budgeted nonferrous exploration expenditures. In 2012-13, NRCan supported increased investment in mineral exploration by contributing to the implementation of Canada's Corporate Social Responsibility (CSR) Strategy for the Canadian International Extractive Sector with the Canadian International Development Agency and the Foreign Affairs and International Trade Canada (now Foreign Affairs, Trade and Development Canada). The CSR Strategy is designed to improve the competitive advantage of Canadian companies in the international extractive sector by enhancing their ability to manage social and environmental risks.

NRCan also continued to work in collaboration with Aboriginal Affairs and Northern Development Canada and the Canadian Northern Economic Development Agency to solidify and apply a minerals development cycle approach to facilitate the sustainable development of mineral resources in the North. The Blueprint concept provides the basis for each sector to develop a plan to make resource development in that area more efficient and effective. A paper and presentation were developed, presented and shared with other government departments that explained the concept and implementation of regional blueprints.

Sub-Program 1.3.2: Forest-based Community Partnerships

Description: Weakened markets, increased global competition, and forest sector restructuring have led to mill closures, capacity reductions and job losses in forest-based communities across the country. As a result, communities are looking to diversify their economies by participating in a wide-variety of economic development opportunities arising from a transitioning forest sector. Through its Forest Communities Program (FCP) and Aboriginal forestry project initiatives, NRCan supports and facilitates community and regional-scale partnership projects and provides financial support to 11 forest-based community partnership organizations and to Aboriginal communities across Canada. The objective is to assist community partnership organizations in developing innovative knowledge products, tools and strategies so that Aboriginal and non-Aboriginal forest-based communities may participate in and benefit from emerging economic opportunities. Projects contribute to capacity building and business development opportunities in areas such as biomass and bioenergy; non-timber forest products; local wood initiatives; and forest management.

Financial Resources – For Sub-Program 1.3.2 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference 2012-13
8,690	6,420	2,270

*The difference between Planned Spending and Actual Spending is largely attributed to Budget 2012 Savings Measures.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 1.3.2

Planned 2012-13	Actual 2012-13	Difference 2012-13
33	30	3

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 1.3.2

Expected Result	Performance Indicator	Target	Actual Result
Forest-based and Aboriginal communities have the knowledge needed to take advantage of emerging economic opportunities	Number of new economic projects facilitated, brokered, and/or developed with NRCan knowledge and funding	Upward trend from baseline year of 2008 by March 31, 2013 (baseline: 166 FCP-funded projects carried out in 2008)	In 2012-13, approximately 90 projects were to be facilitated using NRCan knowledge and funding from the Aboriginal Forest Initiative and the Forest Communities Program. Final information on projects is not yet available. This decrease from the 2008 baseline is a result of reduced funding as per Budget 2012 Savings Measures. Source: Strategic Plans, annual workplans and reports for Forest Communities Program sites.
Increased investments by forest-based community partners relative to investments made by NRCan over the duration of the Forest Communities Program	Ratio of program funds leveraged	Contributions from funded forest community partners exceed NRCan's contributions by 2:1 by March 31, 2013	Financial contributions from partners were expected to exceed NRCan's investment by a ratio of 1.5:1, a value that is likely to increase when information from Final Reports is available. In-kind contributions, which are included in target achievement calculations, are not reflected in the above, and will be substantial. Source: Annual reports and audited financial statements from community partnership organizations receiving funding.

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[54].

Performance Analysis and Lessons Learned

Despite the decrease in funding in this sub-program, and related decrease in the number of projects developed with NRCan knowledge and funding, the Department was able to support investments in the forest sector in 2012-13, particularly through the Aboriginal Forestry Imitative (AFI).

Under the AFI, NRCan signed 15 contribution agreements with proponents, including several in cooperation with other government departments. One such agreement totaling $1.75 million was provided to the Government of the Northwest Territories for Aboriginal communities preparing to supply fibre and business services to a new pellet facility. The AFI also supported the Prince Albert Grand Council in conducting a survey of previous participants in the Junior Forest Rangers Program. The findings will be made available to other groups to help them identify ways to engage and retain Aboriginal youth in pursuits that will help them develop the necessary skills to obtain jobs in the natural resource sectors.

Sub-Program 1.3.3: Targeted Geoscience Initiative 4 (TGI-4)

Description: Mineral resources are one of the principal economic drivers in many rural and remote Canadian communities but known reserves are depleting. In order to sustain economic viability in these areas, new geoscience knowledge and techniques are required to help industry more effectively explore for buried, as-yet undiscovered mineral resources in existing and emerging mining areas. The Targeted Geoscience Initiative 4 is the fourth generation of this program that develops our understanding of entire mineral systems and provides industry innovative ways for deep exploration, thereby maximizing yield. This initiative targets selected mineral districts across Canada to provide the best examples of Canada's major ore systems and to develop optimal predictive models and techniques for deep exploration. In turn, this program supports the natural resource sector's access to viable investment opportunities.

Financial Resources – For Sub-Program 1.3.3 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
9,848	11,486	(1,638)

*The difference between Planned Spending and Actual Spending is mainly attributed to greater contribution of A-Base salary expenditures used to support the Program during 2012-13, as well as some expenditures originally planned for sub-program 1.3.4 Geo-Mapping for Energy and Minerals that were subsequently spent in sub-program 1.3.3 Targeted Geoscience Initiative 4.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 1.3.3

Planned 2012-13	Actual 2012-13	Difference 2012-13
64	69	(5)

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 1.3.3

Expected Result	Performance Indicator	Target	Actual Result
Industry has reduced exploration risks and costs upon application of Natural Resources Canada (NRCan) knowledge and/or techniques	Number of attributions on use of NRCan's geoscience knowledge and techniques in exploration strategies resulting in greater exploration effectiveness	12 by March 31, 2014	Information on the use of NRCan's geoscience knowledge will be available by March 31, 2014. Source: Annual program reports.

Performance Analysis and Lessons Learned

In 2012-13, NRCan contributed to increased investment in mineral exploration through the Targeted Geoscience Initiative 4 (TGI-4) program. TGI-4 improves the understanding of distal indicators of ore environments and relevant exploration methods and technology through the delivery of workshops and presentations, and the release of scientific publications and data to industry and public sector stakeholders.

Specifically, TGI-4 enhanced detection capacity of buried ore deposits through heightened resolution gravity surveys and high-resolution spatial data of otherwise unavailable geochemical indicators (e.g., organic biogeochemistry vectors). The program also produced multi-faceted active and passive seismic surveys coupled with enhanced 3D modelling methodology, allowing for better detection of buried ore deposits. It also improved exploration models for areas where there has been significant knowledge gaps, including the Canadian Malartic region near Val d'Or (Quebec), MacDonald Mines in the James Bay lowlands (Ontario) and CAMECO's Millennium deposit (southeastern portion of the Athabasca Basin). To support the availability of highly qualified personnel for employment in the mineral exploration industry, TGI-4 delivered workshops, field trips and on-the-job training for 20 new students on mineral exploration methodologies and geoscience modeling. A total of 76 students have been trained to date.

Sub-Program 1.3.4: Geo-mapping for Energy and Minerals

Description: Without the public availability of reliable geological information, industry risks either investing in development in areas with low potential for energy and mineral resources or using inappropriate strategies to develop these resources. These risks can affect Canada's ability to attract investment; therefore, in order to attract investment, accessible and reliable geological information is required. The Geo-mapping for Energy and Minerals (GEM) activities provide industry with modern geological information, facilitating industry's ability to identify areas with potential sources of energy and mineral resources. The activities are focused on updating and disseminating the geological model, which identifies the potential areas where certain mineral and energy types could be located. This fills the critical information gap in the knowledge base needed to increase exploration investment and facilitate land-use decisions in the territories.

Financial Resources – For Sub-Program 1.3.4 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
39,140	32,449	6,691

*The difference between Planned Spending and Actual Spending is mainly attributed to expenditures originally planned for sub-program 1.3.4 Geo-Mapping for Energy and Minerals which were subsequently spent in sub-programs 3.2.3 Polar Continental Shelf Logistics Support and 1.3.3 Targeted Geoscience Initiative 4

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 1.3.4

Planned 2012-13	Actual 2012-13	Difference 2012-13
239	199	40

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 1.3.4

Expected Result	Performance Indicator	Target	Actual Result
Governments and industry have increased geoscience information on Canada's North	Number of different products accessed (for example, downloaded) annually on Northern geoscience information	50 by March 31, 2013	A total of 97 new geoscience products including 67 maps, and 30 Open File reports were released. These products are available on NRCan's website, where they are being widely accessed and downloaded by stakeholders including Northerners, industry and academia. Source: Geoscan (NRCan scientific database).

Performance Analysis and Lessons Learned

In 2012-13, NRCan further encouraged investment in mineral and energy exploration by filling knowledge gaps in the North through the Geo-Mapping for Energy and Minerals (GEM) program. GEM released geological maps, geophysical surveys and other information on all three territories and northern parts of six provinces to support resource investment and other types of land-use decisions. By so doing, GEM provided geoscience knowledge that is instrumental to making informed resource investment and land-use decisions in the North. In addition, all of GEM outputs were made available for download via GEOSCAN. This interactive compendium was distributed at Geoconvention 2012, AMEBC Mineral Exploration Roundup 2013, and the Prospectors and Developers Association of Canada 2013. In addition, one-page updates for each of the mineral and energy projects were distributed at these forums. The updates and the compendium were also distributed together on a mini CD-ROM specially designed for distribution at the Canada pavilion at the 34th International Geological Congress in Australia. GEM's work was also highlighted through various sources in 2012-13 (e.g., Global Business Reports for Engineering & Mining Journal).

An audit and evaluation of the GEM Program found that it is relevant and aligned with Government of Canada priorities, and that it fills an existing need in the North, where basic geoscience information is lacking. The findings further indicate that the program is providing the geoscience knowledge base that makes exploration more cost-effective and that industry is using the data in its exploration planning. The recommendations identified in the audit and evaluation reports will help form the management and organizational design of the next phase of the GEM program.

Sub-Program 1.3.5: New Energy Supply

Description: The development of new sources of energy is pivotal in addressing Canada's long-term energy requirements due to increased energy use and the global decline in conventional energy resources. These new sources will support the energy supply mix necessary for sustainable long-term economic growth in Canada. However there is a current lack of geoscience information to enable the private sector to make investment decisions. This sub-program provides strategic assessments, methodologies and information required to make investment decisions on the offshore and other viable renewable resources such as gas hydrates, shale gas, geothermal and tidal energy supplies that could become an important component of Canada's future energy mix.

Financial Resources – For Sub-Program 1.3.5 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
8,153	6,737	1,416

*The difference between Planned Spending and Actual Spending is mainly attributed to a reduction in Planned Spending for Budget 2012 Savings Measures. Additionally, expenditures planned for sub-program 1.3.5 New Energy Supply were subsequently spent in program 3.1.5 Geohazards and Public Safety due to redeployment of staff as well as a scientific response to study the aftermath of British Columbia Coast 2012 major Earthquake.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 1.3.5

Planned 2012-13	Actual 2012-13	Difference 2012-13
70	49	21

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 1.3.5

Expected Result	Performance Indicator	Target	Actual Result
Government departments, regulators and industry are informed by reports and strategic assessments on offshore and new energy supply	Number of different strategic reports and assessments accessed (e.g., downloaded) by stakeholders annually	5 by March 31, 2013	56 peer-reviewed strategic journal reports and 5 Open File assessments on offshore and new energy supply were produced and downloaded. These products, which help to maintain and increase the natural resource sectors' knowledge on existing and new energy market segments, were substantially downloaded (with the National geothermal assessment Open File being the top Geoscan download of 2012). Source: Annual program performance reports.

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[33].

Performance Analysis and Lessons Learned

In 2012-13, through its New Energy Supply sub-program, NRCan developed and released geoscience information on the viability of new energy sources (e.g., geothermal energy in northern communities) that helped to encourage industry interest, investment and support for policymakers. This not only contributes to the global competitiveness of Canada's energy products, but it also helps reduce dependence on traditional sources of energy and in so doing ⓐ offsets the resulting environmental impacts. NRCan exceeded its annual target of having at least 5 strategic reports or assessments accessed or downloaded by stakeholders. Some of the resources that were particularly useful to stakeholders in 2012-13 included:

- A proof of concept Report for Mallik gas hydrates, which presents both the environmental and regulatory basis for moving gas hydrates from resource to reserve status;
- The development of new geoscientific knowledge and insight into the resource potential of the Nova Scotia offshore as part of a major priority collaborative multi-agency Play Fairway Analysis (PFA) that led to $2B investment by exploration industry;

- The gravity-aeromagnetic survey (with the government of Newfoundland & Labrador) connecting onshore-offshore geology of western Newfoundland;
- A new geological synthesis and assessment of Utica Shale directly supported Quebec's shale gas Strategic Environmental Assessment and;
- North American Carbon Capture and Storage Atlas.

The resources produced by NRCan under this sub-program supported Goal 1 (Climate Change) and target 1.1 (Climate Change Mitigation) of the 2010-13 FSDS.

Sub-Program 1.3.6: Major Projects Management Office Initiative

Description: Major resource projects represent significant economic investments, creating thousands of jobs and providing important economic development opportunities for communities across Canada. Efficient and effective project reviews are critical to industry's ability to secure the investment needed to capitalize on these economic opportunities, while maintaining strong environmental protection. The Major Projects Management Office/Initiative provides a single window for industry and stakeholders into the federal regulatory system. The objective of the sub-program is to optimize the performance of the existing regulatory framework for major project reviews, and to lead the development of options for broader, system-wide improvements.

Financial Resources – For Sub-Program 1.3.6 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
338	3,409	(3,071)

* The difference between Planned Spending and Actual Spending is mainly attributed to the funding received through Supplementary Estimates related to the renewal Major Projects Management Office.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 1.3.6

Planned 2012-13	Actual 2012-13	Difference 2012-13
3	24	(21)

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 1.3.6

Expected Result	Performance Indicator	Target	Actual Result
Regulatory reviews of major projects are timely and predictable	Percentage of current major resource project reviews within 8 weeks or less of their target timeline * this measure represents the collective performance of multiple departments and agencies in meeting their service standards and target timelines for project reviews	80% on an ongoing basis	Progress in meeting project review timelines remained above the 80% target at all times and was at 89% at the end of March, 2013 (it is important to note that this measure represents the collective performance of multiple departments and agencies in meeting their target timelines for project reviews). Source: Major Projects Management Office Tracker, project evaluations (NRCan database).
	Average duration of completed major resource project reviews	2 years on an ongoing basis	The average duration for project reviews completed was 18 months. Source: Major Projects Management Office Tracker (NRCan database).

Expected Result	Performance Indicator	Target	Actual Result
A whole of government approach to Aboriginal consultation is consistently applied to all Major Project Management Office (MPMO)	Percentage of Project Agreements that include milestones and service standards related to Aboriginal consultation responsibilities (where relevant)	100% on an ongoing basis	Aboriginal consultation plans and milestones are included in 100% of project agreements. Furthermore, steps were taken to clarify the Crown's approach to Aboriginal consultation through the development of a guidance document for proponents. Source: Major Projects Management Office Tracker, program records (NRCan database).

Performance Analysis and Lessons Learned

NRCan's MPMO worked to advance fundamental improvements to the regulatory system for major resource projects through development and implementation of the Government's plan for Responsible Resource Development, a key component of the Government's Economic Action Plan 2012. The plan has four key objectives: making the review process for major projects more predictable and timely; reducing duplication in the review process; strengthening environmental protection; and enhancing consultation with Aboriginal peoples. Key elements of this plan, including changes to seven pieces of legislation relating to major projects, were brought into force as part of Bill C-38, the Jobs, Growth and Long-term Prosperity Act on July 6, 2012. The changes, including related regulatory and policy proposals, are now being implemented.

The MPMO managed the federal regulatory process for more than 74 projects representing over $200 billion in investments to ensure timely and predictable reviews and that new legislated timelines were met. All of the MPMO projects undergoing a federal regulatory review are on track to have Project Agreements signed by Deputy Heads. The MPMO also amended already-signed Agreements to align with changes to the regulatory review process implemented as part of the Government's plan for Responsible Resource Development. Finally, the MPMO worked with other government departments to streamline Project Agreements in a way that reduces administrative burden while maintaining the overall effectiveness of this key accountability and transparency tool.

In addition, the MPMO advanced measures to enhance consultations and engagement with Aboriginal groups, including supporting the work of the Special Federal Representative on West Coast Energy Infrastructure.

Program 1.4: Statutory Programs – Atlantic Offshore Accords

Description: This program is about monitoring and facilitating payment disbursal agreements and transfer payments under the *Atlantic Offshore Accord Acts*.

Financial Resources – For Program 1.4 ($ thousands)

Total Budgetary Expenditures 2012-13	Planned Spending 2012-13	Total Authorities 2012-13	Actual Spending 2012-13	Difference* 2012-13
1,134,954	1,134,954	684,965	684,965	449,989

*The difference between Planned Spending and Actual Spending is mainly attributable to lower-than-anticipated payments to the Newfoundland Offshore Petroleum Resource Revenue Fund due to decreases in production resulting from the shut-down of oil-producing platforms, and lower-than-anticipated payments to the Nova Scotia Offshore Revenue Account due to decreases in production resulting from depressed natural gas prices and reduction in operating capacity. These decreases were offset by the Crown Share Adjustment Payment for Nova Scotia Offshore Petroleum Resources that was not included in Planned Spending.

Human Resources – (Full-Time Equivalent – FTEs)* – For Program 1.4

Planned 2012-13	Actual 2012-13	Difference 2012-13
0	0	0

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Program 1.4

Expected Result	Performance Indicator	Target	Actual Result
Management of statutory requirements related to offshore petroleum in Nova Scotia and Newfoundland and Labrador in a timely and efficient manner	Timeliness and accuracy of offshore payments	Payment on time (100%)	100% of payments have been made in a timely fashion and no delays are anticipated for the upcoming payments. Source: Offshore boards, private companies, provinces, Other Government Departments.

Performance Analysis and Lessons Learned

NRCan met its target relating to the timeliness and accuracy of offshore payments in 2012-13. To this end, the Department anticipated and prepared the necessary materials for payments to be processed within a 48-hour period to both Nova Scotia and Newfoundland and Labrador as required under the *Canada-Newfoundland Atlantic Accord Implementation Act and the Canada- Nova Scotia Offshore Petroleum Resources Accord Implementation Acts.* As a result, 100% of payments were made on time.

Strategic Outcome II

2- Natural Resource Sectors and Consumers are Environmentally Responsible

2.1 Energy-Efficient Practices and Lower-Carbon Energy Sources

2.2 Technology Innovation

2.3 Responsible Natural Resource Management

Description: Energy use and natural resource development can have negative impacts on the land, water, and air, which can affect the standard of living of current and future generations. The objective of this Strategic Outcome (SO) is to encourage natural resource consumers and sectors to lessen and prevent environmental impacts. Natural Resources Canada (NRCan) contributes to the achievement of this outcome by encouraging the adoption of cleaner and more efficient technologies, products, practices and services, fostering innovative solutions to environmental challenges associated with natural resource development and use, and enabling the management of potential impacts on the environment. Progress towards achieving this outcome was accomplished in 2012-13 through the following programs (see diagram beside).

Performance Results – Strategic Outcome II

Performance Indicator	Actual Result
Change in Canadian greenhouse gas emissions	Based on the most recent *National Inventory Report 1990-2011: Greenhouse Gas Sources and Sinks in Canada*[56] Canada's greenhouse gas (GHG) emissions decreased by 6.5% (35 megatonnes [Mt] from 2005 to 2011). The largest emissions reductions came from electricity and heat generation, which dropped by 22 Mt, and from manufacturing, which decreased by 17 Mt (driven by the economic downturn), accounting for 35% and 46% of the overall decline, respectively. The decline in emissions from electricity and heat generation is primarily the result of a reduction of electricity and heat generation from coal and oil, and an increase in electricity production from renewable energy, as well as improved energy efficiency. Electricity production from renewable sources is increasing, including the contribution from wind and solar sources. GHG emissions from fossil fuel industries (oil, gas and coal) decreased about 5.5 Mt between 2005 and 2011, primarily due to a 17% decrease in natural gas production and an ongoing trend of declining production of conventional light and heavy crude oil. GHG emissions from the oil sands increased by 16 Mt from 2005 to 2011 due to an increase in production. However, since 1990, the industry has reduced its emissions per barrel of oil produced by 26%. Source: National Inventory Report. This report is published by Environment Canada each year and submitted to the United Nations Framework Convention on Climate Change (UNFCCC).
Annual harvest of timber relative to the level of harvest deemed to be sustainable (Allowable Annual Cut - AAC)	As per the National Forestry Database[57], the annual timber harvest has been within the wood supply limit, which reflects the recognition of sustainable forest management practices. In 2011 (the most recent year for which data are available), the available wood supply for harvest was 230 million cubic metres, but the harvest was 146.7 million cubic metres. Source: The State of Canada's Forest – Annual Report 2010 (NRCan report – National Forestry Database).

Performance Analysis

Considerable progress has been made towards decreasing Canadian greenhouse gas (GHG) emissions. Between 2005 and 2011, GHG emissions declined by 6.5%. This is in part attributable to a reduction in the production of electricity from coal and oil and a complementary increase in production of electricity from renewable sources. A similar decline in GHG emissions from fossil fuel industries (5.5 %) occurred as a result of decreasing production of conventional light and heavy crude oil. Activities undertaken at the program level also supported these trends, in particular, the uptake of more energy efficient practices by Canadians, the private sector and industry, as well as increased investments in technological innovation in each of the natural resource sectors. The Department also developed an improved process for environmental assessments, which provides developers with greater knowledge of the potential negative impacts that could arise from projects (e.g., GHG emissions). With this knowledge, developers are better equipped to help prevent and reduce such impacts.

Program 2.1: Energy-Efficient Practices and Lower-Carbon Energy Sources

2.1 Energy-Efficient Practices & Lower-Carbon Energy Sources

- **2.1.1 Renewable Energy Deployment** ⓐ
- **2.1.2 Support for Clean Energy Decision-making** ⓐ
- **2.1.3 Alternative Transportation Fuels** ⓐ
- **2.1.4 Energy Efficiency** ⓐ

Description: Canada's energy markets are defined by consumption and production decisions; however, consumers and producers do not necessarily make decisions that minimize their impact on the environment due to several barriers including: 1) a lack of awareness of available options and their benefits; 2) insufficient capacity for adoption (e.g. regulatory frameworks, codes and standards, etc.); and 3) financial risk. The objective of this program is to address these barriers and encourage and enable energy consumers and producers to adopt cleaner and more efficient technologies, products, services and practices, thereby transforming the market. This objective is achieved through education and outreach activities, targeted incentives, and regulatory interventions that keep pace with technological changes. Progress towards this program was achieved through the delivery of four sub-programs.

Financial Resources – For Program 2.1 ($ thousands)

Total Budgetary Expenditures 2012-13	Planned Spending 2012-13	Total Authorities 2012-13	Actual Spending 2012-13	Difference* 2012-13
585,488	585,488	521,650	342,425	243,063

*The difference between Planned Spending and Actual Spending is primarily due to Budget 2012 Savings Measures, lapses in the Grants and Contributions Vote for ecoENERGY Renewable Power, ecoENERGY for Biofuels and Grant to the Sustainable Development Technology Canada Next Generation Biofuels Fund and the Operating Vote, the settlement of salary-related expenditures that had not been planned, and the transfer of some funding for overhead to Internal Services.

Human Resources – (Full-Time Equivalent – FTEs)* – For Program 2.1

Planned 2012-13	Actual 2012-13	Difference 2012-13
318	296	22

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Program 2.1

Expected Result	Performance Indicator	Target	Actual Result
Energy Consumers and producers adopt environmentally responsible products and practices	Canada's total annual energy savings due to efficiency	Favourable 5-year trend in PJ saved, as per 2006 baseline, now and ongoing	From 2006 to 2010, energy savings due to energy efficiency in Canada showed a favorable trend. Over this time period, energy efficiency improved 6%, reducing energy use by 465 petajoules (PJ). From 1990 to 2010, energy efficiency in Canada improved by 25%, a significant increase in energy savings which reduced energy use by 1681 PJ and saved Canadians $32 billion in 2010. More details on Canada's energy efficiency improvements as well as information on trends in energy use and energy efficiency in the residential, commercial/institutional, industrial, and transportation sectors can be found in the report *Energy Efficiency Trends in Canada 1990-2010* and online in the Energy Efficiency Trends Analysis Tables. Source: Energy Efficiency Trends in Canada 1990-2010, NRCan.

Expected Result	Performance Indicator	Target	Actual Result
	Renewable electricity generation capacity in megawatts	Favourable 5-year trend in MW, as per 2005 baseline	A favourable trend has been observed so far. In 2010, total capacity from renewable electricity sources (excluding large hydro) reached 9,261 megawatts (MW). Source: Report to Parliament Under the Energy Efficiency Act (Statistics Canada data with two-year lag).
	Biofuel production in Canada	Favourable 5-year trend, as per 2007 baseline of 786.1 million litres of ethanol and 92.8 million litres of biodiesel, now and ongoing	Since 2007, the production of biofuel in Canada has shown a favourable trend by increasing steadily, rising to 1661 million litres of ethanol and 156.7 million litres of biodiesel in 2011. The level of biofuel production has risen in response to the federal requirement for renewable content in gasoline and diesel. Increased production of renewable fuels diversifies the energy mix in Canada while allowing Canadian consumers to use environmentally responsible products. Source for Ethanol: 2007-2008 – Canada Revenue Agency; 2009-2011 –NRCan ecoENERGY for Biofuels Source for Biodiesel: 2007-2011 – US Energy Information Administration.

Performance Analysis and Lessons Learned

The reduction in GHG emissions is also supported by activities at the sub-program level that continue to encourage Canadian consumers and producers to adopt environmentally responsible products and practices and the increased availability of renewable energy and alternative fuels as well as the provision of clean energy expertise to support decision-making by all levels of governments. Trends at the program level show that energy efficiency savings have increased over the past two decades. Favourable trends in the generation of renewable electricity capacity and the production of biofuels have also contributed to the reduction in emissions. For example, in 2010, total capacity from renewable electricity sources (excluding large hydro) reached 9,261 MW compared to 5790 MW in 2005. In 2011, biofuel production rose to 1661 million litres of ethanol and 156.7 litres of biodiesel.

Sub-Program 2.1.1: Renewable Energy Deployment

Description: Canada has abundant renewable energy resources and deployment of renewable energy technologies will diversify Canada's energy mix and in the long-term help to decrease Canada's GHG emissions. The sub-program is developing a supportive policy framework for marine renewable energy measures. The sub-program will also continue to support production from renewable energy projects already deployed. This sub-program is supported by ecoENERGY for Renewable Power, the Wind Power Production Incentive, and Marine Renewable Energy Enabling Measures Programs.

Financial Resources – For Sub-Program 2.1.1 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
173,098	158,239	14,859

*The difference between Planned Spending and Actual Spending is primarily due to Budget 2012 Savings Measures, and lapsing of funds in ecoENERGY for Renewable Power due to, on average, lower incentive amounts claimed by the proponents as projects produced less energy than expected.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 2.1.1

Planned 2012-13	Actual 2012-13	Difference 2012-13
10	9	1

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 2.1.1

Expected Result	Performance Indicator	Target	Actual Result
Stakeholders are informed in a timely manner of policy options for developing marine renewable energy in the federal offshore	Policy paper advancing knowledge of policy options for administering marine renewable energy in Canada's federal offshore is produced on time	March 31, 2015	The Department is on track to meet this target, as it intends to produce the Marine Renewable Energy Enabling Measures (MREEM) policy paper by March 31, 2015. Source: Marine Renewable Energy Enabling Measures Program reports.
Production of renewable electricity	# of terawatt hours (TWh) of clean electricity produced	16.5 TWh by March 31, 2013	Established projects are expected to continue to generate up to 16.9 TWh of clean electricity production per year, which would displace 7.0 to 7.7 Mt of CO_2 emissions per year. Source: Data from ecoENERGY Renewable Power and Wind Power Production Incentive program databases.

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[58].

Performance Analysis and Lessons Learned

The ongoing generation of renewable power capacity, which is instrumental for GHG emissions reduction, was supported by the 126 contribution agreements that NRCan signed before March 31, 2011, under the Wind Power Production Incentive and ecoENERGY for Renewable Power. These agreements represent 5382 MW of renewable power capacity and total commitments for the two programs of $1.64 billion. In 2012-13 alone, 15.2 TWh of clean electricity was produced. These achievements supported Goal 2 (Air Pollution) of the 2010-13 FSDS. A 2012 audit[59] of the ecoENERGY for Renewable Power program indicated that it has an efficient governance and monitoring system and that it is administered with due diligence and transparency in accordance with the approved terms and conditions.

A report on the regulatory approaches to marine renewable energy management in other countries was also produced in 2012-13. The report will contribute to advancing knowledge of policy options for administering marine renewable energy in the Canadian federal offshore.

Sub-Program 2.1.2: Support for Clean Energy Decision-making

Description: The development of Canada's energy resources is a source of greenhouse gas emissions and other environmental impacts. The transition to a cleaner energy mix is a long-term challenge that requires an understanding of how clean energy production options can fit within the broader energy system. There is insufficient information for the public and federal government decision makers to evaluate the effectiveness of solutions to the domestic and international environmental impacts of energy development. This sub-program provides tools, information and analysis to Canadians on climate change mitigation and clean energy technologies, and supports Canada's international climate change negotiators. This sub-program is supported by the Clean Energy Policy Program and the International Negotiations program.

Financial Resources – For Sub-Program 2.1.2 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
3,845	2,712	1,133

*The difference between Planned Spending and Actual Spending is primarily a result of a lapse in the Clean Energy Policy Program. The lapse is mainly due to a contract that has not materialized and to lower-than-anticipated travel expenditures.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 2.1.2

Planned 2012-13	Actual 2012-13	Difference 2012-13
29	19	10

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 2.1.2

Expected Result	Performance Indicator	Target	Actual Result
The public and federal government decision-makers have access to tools and information that support decisions on climate change and clean energy issues	Number of new climate change tools and information products available to the public	15 by March 31, 2016	NRCan is on track to meet this target, having produced 11 publicly available fact sheets, providing information about carbon capture and storage (CCS) projects. These fact sheets provide information on specific CCS projects including the partners involved, costs, expected outcomes and the amount of carbon dioxide (CO_2) to be stored. Two fact sheets were also developed on seismicity and hydraulic fracturing, and work was undertaken to develop a fact sheet on GHG emissions. Source: Program records; NRCan website.
Canadian international climate change objectives are advanced in international meetings	Percentage of Canadian objectives reflected each year in the outcomes of relevant international meetings (e.g. UNFCCC)	75% by March 31, 2013	At least 75% of Canadian objectives were reflected in the outcomes of relevant international meetings, and all outcomes respected the limits and the priorities of Canadian positions. Source: Reports of meetings.

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[60].

Performance Analysis and Lessons Learned

In 2012-13, GHG emissions reduction in the energy sector continued to feature prominently in NRCan's work with federal and international partners. For example, NRCan continued its collaboration with Environment Canada (EC) on the approach to a regulatory framework for GHG emissions, including the development of regulations applicable to the oil and gas sector.

On the international front, the goal of reducing GHG emissions was further supported by NRCan's ongoing efforts at various international fora to advance Canada's interests relating to clean energy technology, including carbon capture and storage (CCS). To this end, NRCan represented Canada on technical issues at the United Nations Framework Convention on Climate Change (UNFCCC) negotiations, which led to the Doha Climate Gateway in December 2012.

The Department also represented Canada in the U.S.-led Clean Energy Ministerial (CEM), showcasing Canada as a leader in clean energy, and worked collaboratively with other major economies to advance the development and deployment of clean energy technologies. This representation was supported by the Department's provision of analysis and advice to the Carbon Capture, Use and Storage Action Group under the CEM. In addition, NRCan produced 11 publicly available fact sheets on CCS and provided expertise on CCS to the Global CCS Institute, and the International Energy Agency.

All of these activities contributed to Goal 1 (Climate Change) and target 1.1 (Climate Change Mitigation) of the 2010-13 FSDS.

Sub-Program 2.1.3: Alternative Transportation Fuels

Description: Alternative fuels (e.g., natural gas, ethanol, biodiesel, etc) have lower carbon content and thus emit fewer greenhouse gases than conventional transportation fuels such as gasoline and diesel. However, fuel producers and users, vehicle and equipment manufacturers, and policy makers face barriers discouraging the production and use of alternative transportation fuels. These barriers include, but are not limited to: lack of market capacity to produce alternative fuels, lack of familiarity of end-users and other stakeholders regarding the benefits of alternative fuel use and the lack of codes and standards governing alternative vehicles and infrastructure. In order to address these barriers, the Program is responsible for increasing production capacity, designing and developing education and outreach materials and facilitating the design, development and updating of codes and standards. This sub-program is supported by the ecoENERGY for Biofuels and ecoENERGY for Alternative Fuels programs.

Financial Resources – For Sub-Program 2.1.3 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
362,534	133,392	229,142

*The difference between Planned Spending and Actual Spending is primarily due to Budget 2012 Savings Measures, which resulted in a reduction in funding for ecoENERGY for Biofuels. In addition, the lapse in the Grants and Contributions Vote related to ecoENERGY for Biofuels program and the Grant to Sustainable Development Technology Canada's Next Generation Biofuels Fund is a contributing factor to lower-than-expected expenditures. The lapse of funds within ecoENERGY for Biofuels resulted from program recipients producing eligible fuel at levels lower than they could have produced under existing agreements. Sustainable Development Technology Canada did not require any funding that was allocated; however, statutory funding will remain available to this program in future years.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 2.1.3

Planned 2012-13	Actual 2012-13	Difference 2012-13
27	24	3

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 2.1.3

Expected Result	Performance Indicator	Target	Actual Result
Fuel producers have increased capacity to produce renewable alternatives to gasoline and diesel	Canada's alternative fuel production capacity	2 billion litres of domestic productive capacity of renewable alternatives to gasoline and 500 million litres of domestic productive capacity of renewable alternatives to diesel or commensurate with funds available by March 31, 2013	Since its launch, the ecoENERGY for Biofuels program signed agreements with producers that represent a constructed capacity to produce 1,881 million litres per year of renewable alternatives to gasoline (ethanol), and 575 million litres per year of renewable alternatives to diesel (biodiesel). Source: Program records.
Stakeholders (policy makers, end-users, alternative and conventional fuel producers, and vehicle and equipment manufacturers) have increased knowledge of alternative fuel pathways and increased awareness of the benefits of alternative fuel options	Percent of survey respondents reporting increased knowledge of alternative fuel pathways and increased awareness of the benefits of alternative fuel options	Target to be established once baseline information collected from first survey (in first year of the program) by March 31, 2013	Results are not yet available. This indicator will be reported on in future years. Source: Annual stakeholder surveys.
Enhanced knowledge within the standards community to harmonize/align and update the codes and standards	Number of codes and standards committees actively working on developing and updating the codes and standards	2 by March 31, 2013	The ecoENERGY for Alternative Fuels program supported three technical committees in 2012-13. These committees are developing codes and standards related to natural gas vehicles. Source: Consultation with standards committees.

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[41]

Performance Analysis and Lessons Learned

ⓐ The positive trend in production of biofuel in Canada was supported in 2012-13 by the ecoENERGY for Biofuels program, which exceeded its target for biodiesel constructed capacity (575 ML/year against a target of 500 ML/year). It should be noted that market conditions, which are beyond the Department's control, sometimes impact its ability to deliver on targets. Such is the case with the ethanol capacity. In 2012-13, production fell short of the target (1881 ML/year against a target of 2000 ML/year).

The ecoENERGY for Alternative Fuels program met its target to support three technical committees that are developing codes and standards related to natural gas vehicles and infrastructure. This program also partially met its additional target to support the establishment of natural gas local support networks, which will act as information hubs for natural gas end-users fleets and other key stakeholders. It is expected that these networks will be in place in 2013-14.

In 2011-12, the Alternative Transportation Fuels sub-program was evaluated. The evaluation found that Alternative Transportation Fuels programs (including ecoENERGY for Biofuels) are consistent with federal and departmental priorities and the role of government. More specifically, the evaluation identified a continued need for the ecoENERGY for Biofuels program until 2016-17, when the program ends, given its integral role in supporting the Government's Renewable Fuels Strategy.

The work undertaken by these programs supported Goal 1 (Climate Change) and Goal 2 (Air Pollution) of the 2010-13 FSDS.

Sub-Program 2.1.4: Energy Efficiency

Description: Increasing energy efficiency remains an effective and low-cost means of reducing greenhouse gas emissions. Many Canadian energy users are unaware of the benefits of adopting energy-efficient technologies and practices. As well, because the energy efficiency of housing, buildings, and energy-using products is continually improving, regulations, codes and standards require ongoing stringency improvements. This program encourages the adoption of energy-efficient technologies and practices through labelling, information and training, and makes the stock of housing, buildings and energy-using products more efficient through regulation, codes, standards and energy benchmarking activities. It also makes industrial and vehicle operations more energy efficient through energy management standards, practices and training. This sub-program is supported by the ecoENERGY Efficiency program.

Financial Resources – For Sub-Program 2.1.4 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
46,011	48,081	(2,070)

*The difference between Planned Spending and Actual Spending is mainly attributed to expenditures related to the settlement of collective agreements and severance pay, which was not included in the Planned Spending, as well as one-time payments for workforce adjustment.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 2.1.4

Planned 2012-13	Actual 2012-13	Difference 2012-13
252	245	7

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 2.1.4

Expected Result	Performance Indicator	Target	Actual Result
Increased energy efficiency resulting from NRCan programs	Petajoules of energy saved through NRCan programming	36-44 petajoules by March 31, 2016	This sub-program met its 2012-13 target of 11.30-13.21petajoules, and is on track to achieve its 2015-16 target of 36-44 petajoules. Source: Program data.

Expected Result	Performance Indicator	Target	Actual Result
Canadians adopt NRCan-targeted energy efficient products and practices	**a) Number of provincial/territorial/ utility programs using NRCan developed housing standards and systems b) Number of jurisdictions adopting the 2011 National Energy Code for Buildings (NECB)**	12 regional programs using NRCan developed housing standards and systems; 4 provinces/ territories adopting NECB or equivalent by March 31, 2013	**A total of 26 provincial, territorial and utility programs used NRCan-developed housing standards and systems in 2012-13. An additional 2 non-governmental programs used the standards and systems. As well, 4 provinces have adopted or taken significant steps toward adopting the 2011 National Energy for Buildings (NECB) or equivalent. Ontario adopted an equivalent building energy code in 2011, and 3 provinces undertook consultations on the NECB in 2012-13. An additional 5 provinces and territories began technical analysis of the code in 2012-13.** Source: Program data
	Implementation of promoted fuel efficient practices by type, related to operations and purchasing by drivers and freight organizations	Increased implementation of fuel efficient driving techniques by participating drivers of light duty and heavy duty vehicles and increased fuel efficiency by freight organizations participating in SmartWay.	**In 2012-13, survey results showed an increase in the implementation of NRCan-promoted fuel-efficient driving techniques by participating drivers of light-duty and heavy-duty vehicles. A case study of student drivers of light-duty vehicles revealed that 85% received the information they needed to conserve fuel from the Auto$mart training course, and nearly all student drivers practised at least three new techniques to conserve fuel.** **Similarly, according to survey results, 96% of professional fleet drivers who participated in SmartDriver training said that they were provided with the information needed to save fuel on the road, and implemented, on average, three new techniques that created 5-7% improvements in fuel consumption. Results are not yet available on the increase of fuel efficiency by freight organizations participating in SmartWay.** Source: **Follow-up participant survey and data from SmartWay participants.**

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[62]

Performance Analysis and Lessons Learned

Energy efficiency measures, such as NRCan's training initiatives for individuals and the development of codes and regulations, contribute to Canada's long-term greenhouse gas emissions reduction goals while saving Canadian consumers and businesses money. Through the ecoENERGY Efficiency program, more than 12 petajoules of energy were saved by March 31, 2013. This is the equivalent to the energy used by 125,000 households each year. The program exceeded its target of providing training to individuals in various sectors. For example, 216,000 drivers were trained in the transportation sector. The related target for the implementation of fuel-efficient practices was also met. Survey results showed that 96% of professional fleet drivers who participated in SmartDriver training increased their knowledge and use of fuel-efficient driving techniques, and similar results were found from surveys of student drivers of light-duty vehicles.

With respect to energy efficient codes and standards, 26 provincial, territorial or utility programs used NRCan-developed housing standards and systems, and 4 provinces adopted or took significant steps towards adopting the 2011 National Energy Code for Buildings. The adoption of housing and building codes and standards improves the minimum energy performance of new construction, making them more efficient and improving the ability of homeowners and building owners to reduce their energy use.

The *Energy Efficiency Regulations* establish energy efficiency standards for a wide range of energy-using products, with the objective of eliminating the least energy-efficient products from the Canadian market. NRCan completed 16 market assessments of consumer and commercial products to be regulated as well as 9 technology assessments.

As with the other sub-programs, all of these activities supported Goal 1 (Climate Change) and Goal 2 (Air Pollutants) of the 2010-13 FSDS.

Program 2.2: Technology Innovation

2.2 Technology Innovation

2.2.1 Materials for Energy ⓐ

2.2.2 Green Mining ⓐ

2.2.3 Clean Energy Science and Technology ⓐ

Description: Solutions to environmental challenges faced by the natural resource sectors require sustained efforts in RD&D because the current level of science and technology is inadequate to address these concerns. However, the natural resource sectors neither have all the necessary knowledge nor make the necessary investments in innovation due to the potential poor return on investment. The objective of this program is to encourage academia, industry and the public sector to research, develop and demonstrate innovative solutions to environmental challenges encountered in the natural resource sectors. This objective is achieved through the generation and dissemination of science knowledge, and the development and demonstration of new technologies. Progress towards this program was achieved through the delivery of three sub-programs.

Financial Resources – For Program 2.2 ($ thousands)

Total Budgetary Expenditures 2012-13	Planned Spending 2012-13	Total Authorities 2012-13	Actual Spending 2012-13	Difference* 2012-13
430,843	430,843	290,673	152,200	278,643

*The difference between Planned Spending and Actual Spending is primarily a result of Budget 2012 Savings Measures, lapses in the Grants and Contributions Vote for the ecoENERGY Innovation Initiative, the reprofile related to the Clean Energy Fund, a transfer from program 3.1 Protection for Canadians and Natural Resources, a transfer to program 1.2 Innovation for New Products and Processes, the settlement of some salary-related expenditures, and the transfer of some funding for overhead to Internal Services.

Human Resources – (Full-Time Equivalent – FTEs)* – For Program 2.2

Planned 2012-13	Actual 2012-13	Difference 2012-13
759	647	112

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Program 2.2

Expected Result	Performance Indicator	Target	Actual Result
Stakeholders invest in S&T to address environmental challenges	Amount of stakeholder investments in research, development and demonstration to address environmental challenges	Favourable 5-year trend 2006 baseline (1.15B)	NRCan has met its target of a favourable five-year trend in stakeholder investments in S&T to address environmental challenges. Specifically, stakeholder investments have increased by 26% increase between 2006 and 2010, the most recent year for which data are available. Source: Statistics Canada survey results (2-year lag).

Performance Analysis and Lessons Learned

Reducing the environmental impacts of natural resource development, including GHG emissions, requires efforts from all levels of government and the public, as described above. However, industry and other stakeholders also have a significant role to play, as they are well positioned to address environmental challenges on the ground and implement innovative practices. NRCan supports industry in doing so through a number of sub-programs that provide new materials, demonstration technologies, and funding for innovation in green mining, clean energy and other areas. The data at the program level show a favourable 5-year trend (against a 2006 baseline) in stakeholder investments in these areas.

Sub-Program 2.2.1: Materials for Energy

Description: This sub-program directly delivers materials research and solutions that enable cleaner energy production, transportation and use. Canada must reduce greenhouse gas emissions from energy production, transportation and use; grow energy supply; and maintain a mix of energy sources and technologies. Innovative materials solutions are key enablers for new technologies for extraction and processing of oil sands and for nuclear and coal-fired power generation. New materials technologies are also needed to increase oil and gas pipeline capacity and to monitor pipeline performance and integrity.

Financial Resources – For Sub-Program 2.2.1 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
15,462	13,204	2,258

*The difference between Planned Spending and Actual Spending is mainly attributed to a lapse at year end, and expenditures originally planned for sub-program 2.2.1 Materials for Energy that were subsequently spent in sub-program 1.2.1 Mining Innovation, this decrease in spending was partially offset by expenditures originally planned for sub-program 3.1.2 Materials and Certification for Safety and Security that were subsequently spent in sub-program 2.2.1 Materials for Energy

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 2.2.1

Planned 2012-13	Actual 2012-13	Difference 2012-13
43	87	(44)

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 2.2.1

Expected Result	Performance Indicator	Target	Actual Result
Industry uses new materials technologies in nuclear reactors	Number of new materials technologies developed or validated by NRCan in nuclear reactor designs submitted for approval	3 (total over 5 years) by March 31, 2017	The Department is on track to meet this target, having developed or validated two new materials technologies as of 2012-13. Source: Meritus Information system.
Industry uses new materials technologies to transport cleaner fossil fuels	Number of proposed projects to transport cleaner fossil fuels using new materials technologies developed or validated by NRCan	3 (total over 5 years) by March 31, 2017	At least three projects have been initiated that seek to develop new materials or technologies to more safely and efficiently transport oil and gas. Source: Meritus Information system.
Industry incorporates advanced materials technologies into new energy-efficient vehicle designs	Number of advanced materials technologies to which NRCan contributed that are identified by industry stakeholders for implementation in new energy efficient vehicles to be produced in North America	2 (total over 3 years) by March 31, 2015	Two advanced materials technologies have been produced to date. Source: Meritus Information System.

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[83]

Performance Analysis and Lessons Learned

NRCan contributed to the positive trend of increased stakeholder investment in energy efficient practices, which help offset negative environmental impacts, by developing—in partnership with others—new materials, projects and advanced materials technologies relating to vehicles. For example, NRCan undertook R&D projects in collaboration with automotive parts suppliers and original equipment manufacturers, such as Cosma, Meridian, General Motors and Ford. Two projects were also initiated with US Steel: one focused on high-strength steels to maintain or improve crashworthiness of lighter, and therefore more fuel efficient vehicles; while the other focused on electrical steel development for improved efficiency of traction motors for electricity-driven vehicles. These projects provide the added benefit of helping to enhance the competitiveness of the Canadian automotive industry.

In 2012-13, NRCan developed oxide-dispersion strengthened alloys as well as zirconia-based ceramic insulation tubes with high-strength and low-thermal conductivity. The Department developed a number of advanced materials technologies particularly related to energy efficient vehicles. NRCan's project work in 2012-13also included a focus on the safe and efficient transportation of oil and gas (e.g., bitumen-derived crude and corrosivity). In addition, NRCan completed projects with Dana Canada to enable the manufacturing of battery coolers at volumes sufficient to support future electric vehicle demand, and with Comber Tool & Mold Engineering Inc. on the process development of nine-speed transmission valve housing. The valve body controls shifting of a nine-speed gear box that has been predicted to improve fuel economy by 16% over the existing six-speed transmission. All of these activities supported Goal 1 (Climate Change) and target 1.1 (Climate Change Mitigation) of the 2010-13 FSDS.

Sub-Program 2.2.2: Green Mining

Description: Mining and processing has impacts on land, water and air. Technology development and commercialization entail significant financial, market, and technical risk, because uptake is dependent upon regulatory requirements, business investment priorities and availability of funding. This sub-program reduces business risks by developing and demonstrating innovative mining technologies and practices that eliminate or reduce environmental impacts and risks. Business needs, technology gaps and priorities are identified with input from the Canada Mining Innovation Council and an advisory committee. Applied research aims to a) reduce land disturbance; water, energy and hazardous chemical use; waste volumes; and releases to the environment and b) accelerate site restoration.

Financial Resources – For Sub-Program 2.2.2 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
7,869	9,454	(1,585)

*The difference between Planned Spending and Actual Spending is mainly attributed to Actual Spending as this sub-program received funding from the Operating Budget Carry Forward. Additional expenditures were incurred from the settlement of collective agreements and severance pay and one-time payments for workforce adjustment which were not included in the Planned Spending.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 2.2.2

Planned 2012-13	Actual 2012-13	Difference 2012-13
105	77	28

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 2.2.2

Expected Result	Performance Indicator	Target	Actual Result
Technology developers increase demonstration of environmental technologies	Number of demonstration projects	3 (total over 5 years) by March 31, 2017	NRCan is on track to meet this target, having completed one demonstration project to date. Source: Mertius Information system.
Industry partners increase financial and in-kind contributions	Value of financial and in-kind contributions by industry partners collaborating with NRCan	10% increase over 3-year baseline of $1.2 M by March 31, 2015	NRCan is on track to meet the target by March 2015. The value for 2012-13 is $3.1 million. Source: Meritus Information system.
Academic, government and other non-industry partners increase financial and in-kind contributions	Value of financial and in-kind contributions by academic, government and other non-industry partners collaborating with NRCan	10% increase over 3-year baseline of $5.8 million by March 31, 2015	NRCan is on track to meet the target by March 2015. The value for 2012-13 is $1.0 million. Source: Meritus Information system.

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[64].

Performance Analysis and Lessons Learned

The use of green mining practices helps to mitigate the environmental impacts that arise from traditional mining. In 2012-13, NRCan supported stakeholder investment through financial and in-kind contributions in green mining by collaborating with industry on the completion of studies to use waste material to replace Portland cement in mine backfill, which will help reduce greenhouse gas (GHG) emissions. NRCan also organized workshops on green mining technologies and followed up on the barriers to the adoption of those technologies. Additionally, the Department developed bioenergy feedstock's on mining lands, which reduces dependence on fossil fuels, decreases GHG emissions and provides a secondary land use after mining operations cease. All of these accomplishments supported Goal 1 (Climate Change) and target 1.1. (Climate Change Mitigation) of the 2010-13 FSDS.

The Department also promoted clean-diesel engine and diesel emission-mitigating technology, which helps to reduce air-borne emissions from underground and open-pit mining operations. The Department's Green Mining research included mine ventilation management, which will reduce energy consumption and the mining environmental footprint. NRCan also began a Canada-wide research initiative called the Green Mining Vehicles Green Energy Application Road Map, which aims to replace the current diesel-powered mining fleet with zero-emission production and utility vehicles.

NRCan successfully completed a project aimed at designing and testing a diesel-electric hybrid loader in an underground mine and continues to work with a manufacturer and Sustainable Development Technology Canada to develop a larger capacity version of the vehicle. NRCan also signed an agreement with the Centre for Excellence in Mining Innovation to transfer the Ventilation on Demand (VOD) technology to Xstrata's Nickel Rim South Mine. This bridging project was undertaken to demonstrate better controls and efficiency between primary and auxiliary fans to deliver the right quantity of air in underground mines.

Sub-Program 2.2.3: Clean Energy Science and Technology

Description: Energy production and use has environmental impacts that cannot be adequately addressed using current technologies. This sub-program establishes collaborations with academia, industry and the public sector to research, develop and demonstrate innovative solutions for environmental challenges in the energy sector. The long-term aim is to lay the foundation for the next generation of clean energy products and practices that will have fewer negative impacts on Canada's air, land and water, by funding and creating and advancing new energy knowledge and technologies. This sub-program is supported by the Program of Energy Research and Development and the Clean Energy Fund.

Financial Resources – For Sub-Program 2.2.3 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
407,511	129,542	277,969

*The difference between Planned Spending and Actual Spending is primarily a result of Budget 2012 Savings Measures related to the ecoENERGY Innovation Initiative and a lapse in the Grants and Contributions Vote related to the ecoENERGY Innovation Initiative and the reprofile related to the Clean Energy Fund. The ecoENERGY Innovation Initiative lapsed funds largely due to a change in policy. The Clean Energy Fund reprofiled funds to future years to fulfil its objectives, in compliance with the commitment made in response to the Budget 2009 announcement to conclude negotiations of three contribution agreements and make amendments to several existing contribution agreements.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 2.2.3

Planned 2012-13	Actual 2012-13	Difference 2012-13
611	483	128

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 2.2.3

Expected Result	Performance Indicator	Target	Actual Result
Academia, industry and the public sector pursue new knowledge and technologies	Ratio of total NRCan program investments in clean energy research, development and demonstration versus leveraged funding from partners	1:1 ratio by March 31, 2013	Target exceeded. The ratio of total NRCan program investments to leveraged funding exceeds the 1:1 target. This is true for each RD&D program (Clean Energy Fund, Program on Energy Research and Development and ecoENERGY Innovation Initiative). Source: Project Annual Reports (PARs). Program Reports.

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[63].

Performance Analysis and Lessons Learned

NRCan made significant progress in 2012-13 on supporting the research, development and demonstration of clean energy projects, which are instrumental for addressing the environmental impacts that arise from the production of traditional forms of energy. For example, through the Program of Energy Research and Development, NRCan funded approximately 280 clean energy R&D projects on a range of issues in energy supply, distribution and end use. Also, through the ecoENERGY Innovation Initiative, NRCan undertook 123 R&D and demonstration projects in five strategic priority areas: energy efficiency, clean energy and renewable fuels, bioenergy, electrification of transportation, and unconventional oil and gas. All of these accomplishments supported Goal 1 (Climate Change) and target 1.1. (Climate Change Mitigation), as well as Goal 2 (Air Pollution) and target 2.1 (Air Pollutants) of the 2010-13 FSDS.

An evaluation of the Clean Energy Systems for Industry (CESI) component of the sub-program found that CESI is relevant and producing noteworthy project-level outcomes. However, the evaluation found that the program could benefit from a focused scope, strengthened diffusion, outreach and knowledge transfer strategy for greater impact.

NRCan completed 7 small-scale carbon capture and storage (CCS) projects with industry partners. Two of the remaining projects will be completed in 2013-14 as a result of administrative changes and technical delays while the last is expected to be completed in 2014-15. Also, more than $253 million was leveraged from proponents and collaborators of two large-scale CCS demonstration projects (Shell Quest and Enhance Energy's Alberta Carbon Truck Line). The construction of both projects is progressing as planned. It is expected that about 3 megatonnes of CO_2 will be captured annually, starting in 2015. In addition, NRCan signed a contract with a consortium of oil sands producers for the investigation of the direct contact steam generation process, further advancing CCS technology. NRCan successfully implemented a pilot-scale pressurized oxy-fuel and gasification energy conversion system. The IEA GHG Weyburn-Midale CO_2 Monitoring and Storage Project was also completed, with the publication of a Best Practices Manual.

Following a rigorous competitive process under the Isotope Technology Acceleration Program, NRCan signed three contribution agreements to further support the development of commercial alternatives to existing reactor-based medical isotope technologies. Consistent with the Government of Canada's intention to exit the medical isotope business by 2016 and move towards a fully market-based supply chain, the anticipated commercialization of these alternative technologies will improve the security of supply for Canadians, reduce the generation of radioactive waste, and support nuclear non-proliferation.

The Department also supported research projects to develop countermeasures for offshore oil spills. Consultations were conducted with northern stakeholders to specifically address the Arctic oil spill research plan and identify any modifications that should be made based on local knowledge.

Program 2.3: Responsible Natural Resource Management

Description: Greater knowledge of risks and environmentally-responsible practices could help to prevent and reduce the environmental impacts of natural resource development. The objectives of the program are to enable government departments, regulatory bodies and industry to assess impacts to the environment and develop, monitor and maintain resources or clean-up wastes responsibly. These objectives are achieved through the provision of assessments and knowledge rooted in sound science, and waste management efforts in collaboration with provinces, federal agencies and municipalities. Progress towards this program was achieved through the delivery of four sub-programs.

2.3 Responsible Natural Resource Management

- **2.3.1 Forest Ecosystem Science and Application** ⓐ ⓝ
- **2.3.2 Groundwater Geoscience** ⓦ
- **2.3.3 Environmental Studies and Assessments** ⓝ
- **2.3.4 Radioactive Waste Management** ⓦ

Financial Resources – For Program 2.3 ($ thousands)

Total Budgetary Expenditures 2012-13	Planned Spending 2012-13	Total Authorities 2012-13	Actual Spending 2012-13	Difference* 2012-13
234,547	234,547	310,838	236,875	(2,328)

*The difference between Planned Spending and Actual Spending is primarily a result of increased funding for the Port Hope Area Initiative a large portion of which lapsed at year end due to delays in implementing the initiative. Additionally, Budget 2012 Savings Measures and some lapses contributed to the difference. Some funding for overhead was transferred to Internal Services.

Human Resources – (Full-Time Equivalent – FTEs)* – For Program 2.3

Planned 2012-13	Actual 2012-13	Difference 2012-13
336	276	60

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Program 2.3

Expected Result	Performance Indicator	Target	Actual Results
Public and private sectors establish practices to mitigate the environmental impacts to natural resources	Number of public and private sectors' new/updated policies, regulations or other decision-making tools complete annually	3 by March 31, 2013	Target is on track. Source: Annual Program Performance Reports: workshop proceedings and meetings with Stakeholders.
Federal Government implements waste management practices that meet modern standards for safety and environmental protection	Number of contaminated sites where the environmental impacts are reduced	Environmental impacts reduced at Whiteshell and Chalk River Laboratories, Glace Bay, Port Granby and Welcome waste management facilities, Port Hope and Northern Transportation Route sites) by 2016	The target is on track to be met. Significant progress was made in remediating specific sites at Chalk River Laboratories (CRL) and Whiteshell Laboratories, as well as at the site of a former Heavy Water Production Plant in Glace Bay, Nova Scotia. Milestones to be completed by the end of March 31, 2014, include the installation and commissioning of a fourth groundwater treatment system at CRL, the installation of a cover over a large waste burial area at CRL, and completion of the remediation work at the Glace Bay site. Source: NLLP program database PHAI program database Canadian Nuclear Safety Commission.

Performance Analysis and Lessons Learned

Another means of addressing environmental impacts of natural resource development is the provision of science-based information and assessments to all natural resource sectors to support informed decision-making, including those for federal regulatory approval processes In 2012-13, NRCan's efforts supported public and private sector organizations in regulatory, policy or environmental management practices, which led to the development of three new or updated policies in the public and private sectors as well as ongoing activities to address challenges related to forestry and groundwater geoscience. NRCan's efforts also resulted in continued progress towards a reduction in the number of environmental impacts from contaminated sites (e.g., Whiteshell, Chalk River Labs, Port Granby).

Sub-Program 2.3.1: Forest Ecosystem Science and Application

Description: Sustainable development of Canada's forests requires that forest ecosystems and their health are better understood, monitored and assessed as forests are susceptible to climate-induced changes, natural (disease) and man-made influences (harvesting, land-use changes). Decision-making, professional practice, international reputation and market access to forest-related products all rely on sound science and knowledge that enables a better understanding of changing forest dynamics. The objective of this sub-program is to increase the overall scientific knowledge on forest ecosystems and support knowledge-based sustainable forest management policies and practices that consider sound ecological, social, and economic principles. Through this sub-program, NRCan conducts research as well as national assessments and monitoring to develop, synthesize and integrate scientific knowledge of Canada's forest ecosystems. This knowledge is used by governments, industry, and non-governmental organizations to develop forest management practices and policies, meet international reporting obligations, and form Canada's negotiating positions on international environmental issues related to forests, and counter perceptions or misconceptions of Canada's forest practices. This sub-program includes the African Model Forest Initiative.

Financial Resources – For Sub-Program 2.3.1 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
22,690	22,459	231

*The difference between Planned Spending and Actual Spending is largely attributed to Budget 2012 Savings Measures combined with a lapse in spending in transfer payments for the African Model Forest Initiative

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 2.3.1

Planned 2012-13	Actual 2012-13	Difference 2012-13
174	146	28

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 2.3.1

Expected Result	Performance Indicator	Target	Actual Result
Increased use of scientific knowledge of Canada's forest ecosystems by governments, industry and non-governmental organizations	Representation of the Canadian Forest Service on forest ecosystems advisory boards or committees involving stakeholders	Maintain current representation on 128 advisory boards and committees by March 31, 2013	NRCan had representatives on 137 forest ecosystem advisory boards and committees during 2012-13. Source: Internal tracking, adjunct professorships.
	Percentage of peer-reviewed ecosystem publications cited over a rolling 5-year period	Stay within 10% of baseline of 78.21% (2007-2011) by March 31, 2013	An average of 83% of NRCan's forest ecosystem publications were cited between 2008 and 2012. Source: Scopus (NRCan's library database took), Science Citation Index.

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[66].

Performance Analysis and Lessons Learned

Although sustainable forest management is a responsibility of the provinces and territories, NRCan helps to reduce the environmental impacts that could result from forestry practices by providing expertise to the provinces and territories on how to sustainably manage forests. Through representation on 137 forest ecosystem advisory boards and committees NRCan exceeded its target of participating on 128 such organizations in 2012-13. More importantly, the Department provided expertise on sustainable forest management through these boards to provinces and territories to address challenges arising from domestic ecosystem sustainability. Some examples follow.

Through the Forest Working Group of the Canadian Council of Forest Ministers, NRCan contributed to identifying and developing options to respond to challenges of domestic forest ecosystem sustainability. The identification and implementation of these options also had positive implications for market access to Canadian wood products.

Canada's National Forest Carbon Monitoring, Accounting and Reporting System enables improved estimation of forest carbon and estimates of greenhouse gas emissions for use in analysis and reporting. For this system, NRCan developed an improved version of the Carbon Budget Model of the Forest Sector (CBM-CFS3), which includes updates to both model parameters representing updated science and improved code and documentation. NRCan also updated information through the National Deforestation Monitoring Program, as deforestation impacts carbon budgets.

ⓐ Through the Cumulative Environmental Management Association, NRCan maintained membership and active involvement on a number of working groups and task groups and provided advice on the development of practices and guidelines for successful reclamation of landscapes disturbed by the oil sands.

The work in this area supported Goal 1 (Climate Change) and target 1.1 (Climate Change Mitigation) of the 2010-13 FSDS.

ⓝ In addition to providing scientific expertise through representation and participating on boards, NRCan produces publications that are cited by stakeholders. An average of 83% of NRCan forest ecosystem publications were cited between 2008 and 2012, overall. In principle, this scientific work can be used to inform clients and stakeholders on sustainable forest management practices (generating and disseminating scientific knowledge related to forest ecosystems is based on publications that have been peer reviewed). This work supported target 7.3 (Sustainable Forest Management) of the 2010-13 FSDS.

FSDS Goal	FSDS Performance Indicator	FSDS Target	FSDS Performance Status
Goal 7 - Biological Resources	Number of peer- reviewed publications related to forest ecosystems (*)	7.3 Sustainable Forest Management - Improve the management of Canada's forest ecosystems through the development and dissemination of knowledge (**)	NRCan continues to increase scientific knowledge on forest ecosystems and forest sustainability, which helps to improve Canada's environmental reputation and contributes to economic competitiveness. On average, between 2008 and 2012, 83% of the Department's peer-reviewed publications on forest ecosystems were used by stakeholders, such as provinces and territories, to inform sustainable management practices. Peer-reviewed publications are the accepted standard for ensuring that the analysis is scientifically sound, and for informing policy grounded in sound science. This performance indicator links to the Canadian Environmental Sustainability Indicator (CESI) Sustainability of Timber Harvest[67].

*NRCan does not share responsibility for this indicator with any other department.

**NRCan does not share responsibility for this target with any other department

Sub-Program 2.3.2: Groundwater Geoscience

Description: Groundwater provides up to 80% of the rural Canadian population's drinking water and is an essential component of ecosystem health. In the face of growing pressures on water resources due to urbanization, economic expansion and growing energy demands, Canada needs a consistent and coordinated approach to groundwater management. Natural NRCan conducts groundwater mapping and assessment activities on key aquifers to better understand the extent of groundwater systems, their dynamics and vulnerability using common protocols, standards and methods. NRCan also collaborates with its provincial partners to ensure data and approaches in different jurisdictions are harmonized. This information is disseminated through a collaborative, national inventory used by other levels and departments of government, planners and land-use professionals for decision-making. The sub-program's comprehensive groundwater information resource and expertise contributes to sustainable land-use decision-making and groundwater management activities, which in turn, supports responsible development of Canada's natural resources.

Financial Resources – For Sub-Program 2.3.2 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
4,413	4,025	388

*The difference between Planned Spending and Actual Spending is partly attributed to Budget 2012 Savings Measures and to the fact that actual expenditures proved to be lower than what was planned for the year.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 2.3.2

Planned 2012-13	Actual 2012-13	Difference 2012-13
43	29	14

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 2.3.2

Expected Result	Performance Indicator	Target	Actual Result
Government and industry access groundwater geoscience	Number of knowledge citations using NRCan's groundwater maps and assessments	10 by March 31, 2013	NRCan achieved its target of 10 citations from other public and private organizations citing use of groundwater geoscience data to support decision-making. Source: National Groundwater Inventory information. Sector Project System, Annual Performance Reports.

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[88]

Performance Analysis and Lessons Learned

Through the ongoing provision of groundwater maps and assessments in 2012-13, the Department contributed to informed decision-making with respect to sustainable land-use and groundwater management activities, which support the responsible development of natural resources and anticipate any environmental impacts that could result. For example, through the Groundwater Geoscience Program, NRCan delivered maps, assessments and characterization activities relating to seven key interjurisdictional aquifers (e.g., Nanaimo, BC, Milk River, AB, Saint-Maurice River, QC). NRCan's Milk River aquifer map and assessment were also presented and used to develop a joint Canada-US 3D Model, harmonizing data and information from both sources.

Progress has been made on assessing and characterizing aquifers. The Department is on track to assess 19 of the 30 key trans boundary aquifers by the end of 2013-14. In addition, NRCan has produced a national groundwater inventory that continues to be improved to help support the sustainable management of Canada's groundwater resources and environmental responsibility.

Key deliverables achieved in 2012-13 were released and shared in a comprehensive and timely manner, including field characterization studies, data analyses, and interpretation and production of maps and reports; government reports submitted to provincial partners for revision; publication of two open files and geophysical assets, and three peer-reviewed papers. Many of these deliverables and the expertise contained therein were cited by provincial government departments, including Quebec and Ontario's Ministries of Environment, the Alberta Geological Survey and universities, such as Université Laval.

Other notable achievements from 2012-13 include the addition of a link on NRCan's Geoscan to the International Joint Commission Research Inventory to strengthen collaboration between both organizations, which has been cited as a significant advancement in hydrogeological characterization and research capacity related to the Great Lakes, and the development of key environmental indicators to monitor the environmental state of the Great Lakes.

These achievements supported Goal 3 (Water Quality) and target 3.1 (Fresh Water Quality) as well as Goal 4 (Water Availability) target 4.1 (Water Resource Management and Use) of the 2010-13 FSDS.

Sub-Program 2.3.3: Environmental Studies and Assessments

Description: Government departments, regulatory bodies and industry require information rooted in sound science in order to reduce the environmental impacts that may occur in the development of major resource projects. This sub-program provides innovative scientific information such as remote sensing science and geoscience expertise to address the environmental risks, impacts and constraints imposed by metals mining, northern pipelines, the oil sands and offshore energy development. NRCan's expertise also contributes toward the completion of environmental assessments required by the Canadian Environmental Assessment Act (CEAA) and for all federally triggered or regulated projects and/or reviews. The expertise is also used in published assessments of non-renewable mineral and energy resources, which are necessary in designating new federal parks and protected areas on federal lands.

Financial Resources – For Sub-Program 2.3.3 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
10,281	9,373	908

*The difference between Planned Spending and Actual Spending is partly attributed to Budget 2012 Savings Measures and to the fact that actual expenditures proved to be lower than what was planned for the year.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 2.3.3

Planned 2012-13	Actual 2012-13	Difference 2012-13
101	69	32

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 2.3.3

Expected Result	Performance Indicator	Target	Actual Result
Governments,	Number of knowledge	5 by March	NRCan achieved its target of 5 citations from other public or

Expected Result	Performance Indicator	Target	Actual Result
regulatory bodies and industry access sound environmental science knowledge and information	attributions - e.g. citations - using NRCan's remote sensing data, geoscience data, or derived information, within the context of environmental studies, reports, or guidelines (excluding CEAA Environmental Assessments, and Mineral and Energy Resource Assessments) (Vigneault in GSC, and CCRS)	31, 2013	private sector organizations to develop products within the context of environmental studies, reports or guidelines. Source: Sector Project System, Annual Performance Reports.
	Percentage of responses delivered as per Environmental Assessments (EA) and Mineral and Energy Resource Assessments (MERA) requests	99% by March 31, 2013	100% of requests were met within the requested timeframe. Source: Sector environmental assessment records, Canadian Environmental Assessment Agency Registry.

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[69]

Performance Analysis and Lessons Learned

Through the provision of environmental geoscience, derived information and remote sensing data in 2012-13, NRCan provided expertise that supported the release of:

- the Joint Canada-Alberta Implementation Plan for Oil Sands Monitoring;
- Nova Scotia's Environment Guidelines on the effective management and remediation of historical gold mines;
- Two chapters of Environment Canada's forthcoming Canadian Mercury Science Assessment, set to be released in 2013; and
- A report on Arctic Mercury Assessment by the internationally recognized organization Arctic Monitoring and Assessment Programme.

This expertise was used to address environmental risks, impacts and constraints associated with metals mining, northern pipelines, the oil sands and offshore energy development.

NRCan provided responses to requests for environmental assessments and mineral and energy resource assessments within the requested timeframes, such as from Parks Canada to support the creation of the Naats'inhch'oh National Park Reserve in August 2012. NRCan continues to provide expertise for feasibility assessments to deliver a clear understanding of mineral and energy resource potential and inform decision-making for the establishment of national parks that balances environmental protection and resource development opportunities. To this end, NRCan assisted Parks Canada with the release of the Mineral and Energy Resource Assessment on Lancaster Sound in 2013-14. This work contributed to Goal 6 (Ecosystem/Habitat Conservation and Protection) and target 6.2 (Terrestrial Ecosystem and Habitat) of the 2010-13 FSDS.

NRCan supported Fisheries and Oceans Canada by providing advice and guidance on potential areas for resource development relating to the federal-provincial-territorial network of Marine-Protected Areas. The provision of this expertise contributed to Goal 6 (Ecosystem/Habitat Conservation and Protection) and target 6.3 (Marine Ecosystems).

Sub-Program 2.3.4: Radioactive Waste Management

Description: In the past, radioactive waste management requirements to protect the environment and human health were neither in place, nor as stringent as modern day practices. Thus, historic nuclear or uranium mining activities have, in some cases, resulted in a legacy of radioactive waste or contaminated lands that pose risks to the environment and the health of Canadians. This sub-program uses policy and program development and implementation to establish long-term management solutions for radioactive waste in areas where federal intervention is required. Specifically, NRCan is involved in clean-up operations in cases where either the wastes were produced by a crown corporation, or the original private sector producer either no longer exists or cannot be held responsible. These sub-program partners with provinces, municipalities and the private sector through the following programs: the Nuclear Legacy Liabilities Program; the Historic Waste Program, including the Port Hope Area Initiative; and the Gunnar and Lorado program.

Financial Resources – For Sub-Program 2.3.4 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
197,164	201,018	(3,854)

*The difference between Planned Spending and Actual Spending is primarily a result of increased funding for the Port Hope Area Initiative, a large portion of which lapsed at year end due to delays in implementing the initiative.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 2.3.4

Planned 2012-13	Actual 2012-13	Difference 2012-13
18	32	(14)

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 2.3.4

Expected Result	Performance Indicator	Target	Actual Result
The federal government develops and implements long-term management solutions to clean up radioactive waste	Percentage of radioactive waste management milestones completed under the Nuclear Legacy Liability Program	80% by March 31, 2018	NRCan is on track to complete more than 90% of its second phase milestones by March 31, 2014. Source: Atomic Energy of Canada Limited quarterly and annual reports
	Percentage of waste management obligations under the Port Hope Legal Agreement achieved	100% by March 31, 2018	NRCan is on track to complete the Port Granby project as planned. Milestones related to the Port Hope Project are behind schedule due to delayed announcement of the Project, lack of scope in the original schedule, and delays associated with re-evaluating the procurement approach. Source: Port Hope Area Management Office: Uranium and Radioactive Waste Division; Low-Level Radioactive Waste Management Office.
	Percentage compliance with applicable Canadian Nuclear Safety Commission institutional controls/licenses to implement management practices	100% by March 31, 2018	NRCan remains compliant with 100% of the Canadian Nuclear Safety Commission project licences. Source: Port Hope Management Office: Uranium and Radioactive Waste Division.

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[78].

Performance Analysis and Lessons Learned

In 2012-13 NRCan continued to make significant progress towards addressing the negative environmental impacts from contaminated sites. For example, through the Nuclear Legacy Liabilities Program (NLLP), an Integrated Waste Management Plan was completed for the Chalk River Laboratories. The Department is on track to complete more than 90% of its second phase milestones by March 31, 2014, relating to waste management under the NLLP.

With respect to Port Hope, the milestones on the project are behind schedule. However, the Department undertook construction of enabling facilities in both Port Hope and Clarington as part of phase II of the Port Hope Area Initiative. This included access roads and the construction of water treatment facilities. This construction supported Goal 3 (Water Quality) and target 3.1 (Fresh Water Quality) of the 2010-13 FSDS. The Department is also on track to complete the Port Granby Project as planned.

The remediation option for the decommissioning of the Gunnar Uranium mine and mill sites in Saskatchewan is behind schedule. Saskatchewan has yet to decide on an option given that its environmental impact study has been delayed. The evaluation of the Gunnar Mine Site Rehabilitation Project found that the Gunnar Project is needed, from both environmental and human health standpoints, and that the project is aligned with government priorities and NRCan's strategic outcome relating to environmental responsibility.

NRCan remains compliant with 100% of the Canadian Nuclear Safety Commission project licences.

Strategic Outcome III

Description: It is through only a deep and expansive understanding of Canada's lands and natural resources so that today's decision-makers can determine the right choices for tomorrow – choices that keep Canada's lands and natural resources properly managed and safeguarded. This deep and expansive understanding requires expertise and technology. The objective of this strategic outcome is achieved by providing this expertise and technology, enabling a) the management of risks to human, natural resource, and infrastructure health and b) the use of landmass knowledge.

3- Canadians have information to Manage their Lands and Natural Resources, and are Protected from Related Risks

3.1 Protection for Canadians and Natural Resources

3.2 Landmass Information

Performance Results – Strategic Outcome III

Performance Indicator	Actual Result
Number of new and updated public and private sector adaptation and risk mitigation activities, plans and strategies, such as Natural Resource Management Plans, Adaptation Plans or Emergency Preparedness Plans using NRCan information	NRCan has met this target by facilitating public and private sector organizations in their development of more than nine adaptation and risk mitigation activities, plans and strategies through information, services and collaboration. Source: Annual Program Performance Reports.
Number of national or international interoperable geo-tools and data frameworks that support the management of lands, natural resources, national infrastructure and human populations	NRCan has released new tools and data frameworks, which contribute to the management of Canada's lands and natural resources. Source: Annual Program Performance Reports.

Performance Analysis

In 2012-13, NRCan provided expertise and developed new tools and data frameworks for uptake by stakeholders to manage lands and natural resources and to mitigate related risks and hazards. Performance results at the strategic outcome level indicate that public and private sector organizations have developed hazard mitigation and climate change adaptation activities, plans and strategies as a result of the Department's expertise and collaboration. For example, NRCan's assessment of space weather hazards was used by a proponent for decision-making on the final design and trajectory of the proposed Alaska Highway pipeline. This information was needed to mitigate hazards presented by the region's high telluric (geomagnetic) activity.

NRCan also developed new tools and data frameworks that support the management of Canada's lands and natural resources. In preparation for its role as chair of the Arctic Council from 2013 to 2015, the Department released a model for the Arctic Spatial Data Infrastructure, in collaboration with the mapping agencies of eight circumpolar nations. The Department also provided expertise for the Multi-Agency Situational Awareness System (MASAS) by completing outreach sessions to build data requirements, develop long-term public-private partnership operations and expand the use of MASAS in support of planning and execution of emergency response efforts. This work is carried out in partnership with the Centre for Security Science and Public Safety at Defence Research and Development Canada.

Through collaborative efforts, NRCan also continued to support the development of the Federal Geospatial Platform (FGP), an online environment that will consist of authoritative geospatial data layers, services and applications from a variety of data sources. This Platform will ultimately support data access, integration, analysis and visualization capacity to inform socioeconomic and environmental decision-making. The Platform is also consistent with Canada's Action Plan on Open Government[71]. Once launched, the FGP will catalyze the Government of Canada's evolution towards a modern, technology-enabled organization, providing discovery and access to comprehensive collections of accurate and authoritative geospatial information.

Program 3.1: Protection for Canadians Natural Resources

Description: Natural resource development and military activities, and changes in the environment pose risks to human, natural resource and infrastructure health. Without the appropriate coordination for and knowledge on the management of these risks, the impacts would be severe. The objective of this program is to enable other government departments, communities and the private sector to manage these risks to human, natural resource and infrastructure. This objective is achieved by providing regulation and knowledge, fulfilling legislated and regulatory responsibilities, and ensuring capacity. Progress towards this program was achieved through the delivery of five sub-programs.

3.1 Protection for Canadians and Natural Resources

- **3.1.1 Explosives Safety and Security**
- **3.1.2 Materials and Certification for Safety and Security**
- **3.1.3 Forest Disturbances Science and Application**
- **3.1.4 Climate Change Adaptation**
- **3.1.5 Geohazards and Public Safety**

Financial Resources – For Program 3.1 ($ thousands)

Total Budgetary Expenditures 2012-13	Planned Spending 2012-13	Total Authorities 2012-13	Actual Spending 2012-13	Difference* 2012-13
56,020	56,020	60,234	55,604	416

*The difference between Planned Spending and Actual Spending is partly attributed to salary-related expenditures that were not included in Planned Spending, spending of funding received through the Operating Budget Carry Forward, transfers from program 1.3 Investment in Natural Resource Sectors, a transfer to program 2.2 Technology Innovation, Budget 2012 Savings Measures, and a reprofile for Enhancing Competitiveness in a Changing Climate. Some funding was transferred to Internal Services for overhead.

Human Resources – (Full-Time Equivalent – FTEs)* – For Program 3.1

Planned 2012-13	Actual 2012-13	Difference 2012-13
569	452	117

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Program 3.1

Expected Result	Performance Indicator	Target	Actual Result
Risks to natural resource sectors, infrastructure and human health are safety managed	Number of climate change risk or related assessments completed on natural resources and infrastructure	4 by March 31, 2013	NRCan delivered three assessment reports related to climate change. Work continues on a national-scale climate change adaptation assessment report, which will provide an update to the 2008 national assessment, set to be published in 2013-14. Source: Annual Program Performance Reports.
	Number of active collaborations with the public and private sector that manage risks to human population, natural resources and infrastructure health	3 collaboration agreements by March 31, 2013	NRCan has a number of active collaborations with the public and private sectors that manage risks to human population, natural resources and infrastructure health. Source: MOUs/agreements with governments and private sector.

Performance Analysis and Lessons Learned

NRCan's work at the sub-program level in 2012-13 focused on a broad range of hazards and risks that could negatively impact Canadians, the environment or infrastructure. NRCan provided expertise to stakeholders about forest disturbances, adaptation risks and opportunities for communities and northern infrastructure, geohazards and public safety. It also supported the regulatory regime for explosives and certifications. This work contributed to performance at the program level.

The performance results at the program level indicate that the Department met expectations for the number of active collaborations with the public and private sectors to support the management of risks. NRCan also launched a national Adaptation Platform[72], which brings together all levels of government, the private sector and other key stakeholders to generate new information and insights, to share information, expertise and experience, and to identify opportunities for adaptation initiatives. The Department delivered climate change assessments and reports in support of the Iqaluit Airport improvement project and the impact of changes to permafrost in two key areas: the Mackenzie Valley and Yukon's Department of Highways (in collaboration with the Government of Yukon and Transport Canada). Work continues on a national-scale climate change adaptation assessment report, set to be published in 2013-14.

Sub-Program 3.1.1: Explosives Safety and Security

Description: Explosives are essential for many economic activities but are inherently dangerous. Strict controls are needed to protect Canadians from incidents that could result in death, serious injury, and economic and environmental harm. This sub-program administers and enforces the Explosives Act and regulations that govern the manufacture, importation, transportation, sale, distribution and storage of explosives, including fireworks and pyrotechnics, and the sale of materials that can be used to produce explosives. Explosives use falls primarily within provincial jurisdiction.

Financial Resources – For Sub-Program 3.1.1 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
4,751	4,946	(195)

*The difference between Planned Spending and Actual Spending is mainly attributed to Actual Spending related to the settlement of collective agreements and severance pay, which was not included in Planned Spending, as well as one-time payments for workforce adjustment

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 3.1.1

Planned 2012-13	Actual 2012-13	Difference 2012-13
74	62	12

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements

Performance Results – For Sub-Program 3.1.1

Expected Result	Performance Indicator	Target	Actual Result
Regulated establishments comply with regulatory requirements	Percentage of inspection reports rated satisfactory or better	90% or more by March 31, 2013	Inspection sites received a rating of 3 or better (on a scale of 1 to 5, with a score of 3 considered as satisfactory) 87% of the time for the reporting period. Source: Inspector's Reports (internal document).
Distributors reduce the risk of regulated precursor chemical diversion	Percentage of regulated precursor chemical distributors that provide documented evidence of the implementation of a voluntary Precursor Outreach Initiative	75% or more by March 31, 2015	Explosives inspectors are working with stakeholders and are on track to meet this target by March 31, 2015. Source: Voluntary reports by distributions and Industry Associations.

Performance Analysis and Lessons Learned

NRCan's work relating to explosives regulations helped to mitigate the risks from explosives. In 2012-13, more than 65% of planned inspections for explosives factories and magazines were completed. The total number of inspections completed in 2011-12 was 629 compared to the target of 800. Consequently, the Department is developing an integrated explosives inspection plan, which will increase efficiency by planning and conducting inspections on a geographical basis using regionally based inspectors. This will enable inspectors to reduce travel time and so have more time to conduct inspections. An integrated inspection plan will also allow a global risk-based approach for all types of licences and permits issued by NRCan.

During the same period, NRCan issued 1891 licences and certificates, exceeding the target of 1700. The Department is also carefully reviewing the feedback obtained through the Canada Gazette I[73] process. It is anticipated that the Explosives Regulations will be published in Canada Gazette, Part 2, in 2013 and enter into force in early 2014.

Sub-Program 3.1.2: Materials and Certification for Safety and Security

Description: Materials are engineered and fabricated for specific applications and environments. Defects in equipment or structures can cause failures that result in death, serious injury, and economic and environmental damages. Non-destructive testing helps to ensure the integrity of safety-critical components in aircraft, boilers and pressure vessels, bridges, buildings, cranes, heavy equipment, nuclear reactors, pipelines and other applications. Several federal regulators and other authorities require non-destructive testing to be performed by inspectors certified according to national standard CAN/CGSB-48.9712-2006, Qualification and Certification of Non-Destructive Testing Personnel. This sub-program certifies individuals to this national standard. The standard and certification procedures are aligned with requirements in international standard ISO 9712:2005 and European standard EN 473:2000.

Financial Resources – For Sub-Program 3.1.2 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
1,776	(362)	2,138

*The negative amount in Actual Spending is a result of revenue of $1.497 million exceeding spending of $1.135 million. The difference between Planned Spending and Actual Spending is mainly attributed to expenditures originally planned for sub-program 3.1.2 Materials and Certification for Safety and Security that were subsequently spent in sub-program 2.2.1 Materials for Energy.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 3.1.2

Planned 2012-13	Actual 2012-13	Difference 2012-13
57	11	46

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 3.1.2

Expected Result	Performance Indicator	Target	Actual Result
Individuals are certified to perform non-destructive testing to a national standard	Number of individuals holding one or more valid certifications issued by NRCan	4,800 by March 31, 2013	NRCan issued certifications to 5,429 individuals, exceeding the target by 13%. Source: Meritus Information System.
	Number of valid certifications issued by NRCan (certifications are currently offered in six methods and individuals are typically certified in more than one method and/or sector)	12,000 by March 31, 2013	NRCan issued 13,394 certifications, exceeding the target by 12%. Source: Meritus Information System.
Defence stakeholders adopt advanced materials solutions to protect light military vehicles and occupants from the effects of improvised explosive devices	Number of advanced materials solutions to which NRCan contributed that have been identified for adoption by defence stakeholders	1 (total over 3 years) by March 31, 2013	One advanced material solution has been identified for adoption by defence stakeholders. Source: Meritus Information System; stakeholder data.

Performance Analysis and Lessons Learned

In addition to developing regulations, NRCan is responsible for issuing certifications to ensure that inspectors are qualified in accordance with national standards. In 2012-13, NRCan issued certifications to 5,429 individuals against a target of 4,800. The Department also issued 13,394 valid certifications instead of the originally planned 12,000.

Additionally, NRCan met the target of producing of advanced materials solution for adoption by defense stakeholders by developing a new material for use in light-armored vehicles. This material is intended to protect against increasingly powerful explosive devices and reduce the weight of personal armor.

Sub-Program 3.1.3: Forest Disturbances Science and Application

Description: Climate change is widely believed to be contributing to an increase in the frequency and intensity of native and invasive alien forest pest infestations and other disturbances such as wildland fire. Canada needs the scientific knowledge to understand, forecast, mitigate and adapt to natural and human-induced impacts to forest ecosystems. Through this sub-program, NRCan conducts research and analysis to develop scientific knowledge of forest disturbances (e.g., pests, fire). This scientific knowledge is used by federal, provincial and territorial governments and agencies (both policy-makers and regulators) as well as the forest industry to assess risks, forecast impacts and develop mitigation and adaptation strategies related to pests, fire, and climate change. This sub-program includes the Invasive Alien Species Strategy for Canada.

Financial Resources – For Sub-Program 3.1.3 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
28,015	30,020	(2,005)

*The difference between Planned Spending and Actual Spending is primarily attributed to increased salary expenditures due to one-time work force Adjustment payouts, and to the impact of Back Pay for several collective agreements.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 3.1.3

Planned 2012-13	Actual 2012-13	Difference 2012-13
255	246	9

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 3.1.3

Expected Result	Performance Indicator	Target	Actual Result
Increased use of scientific knowledge of forest disturbances by governments, agencies and industry	Representation of the Canadian Forest Service on forest disturbances advisory boards or committees involving stakeholders	Maintain current representation on 73 advisory boards and committees by March 31, 2013	NRCan had representatives on 72 forest disturbances advisory boards and committees. Source: Internal tracking, adjunct professorships.
	Percentage of peer-reviewed disturbances publications cited over a rolling 5-year period	Stay within 10% of baseline by March 31, 2013 (Baseline: 70.87% 2007-2011)	An average of 78% of NRCan disturbance publications were cited between 2008 and 2012. Source: Scopus (NRCan's library database tool) Science Citation Index.

Performance Analysis and Lessons Learned

The Department helps to address risks resulting from infestations of pests in forests. In 2012-13, NRCan delivered a knowledge transfer workshop on the Spruce Budworm Decision Support System for the Nova Scotia Department of Natural Resources. NRCan also facilitated an information session on mountain pine beetle in affected provinces and delivered a knowledge review as well as a symposium, which focused on the implications of the infestations. The Department also contributed expertise to the analysis of the impacts of the spread of emerald ash borer to Manitoba and Northern Ontario, as a member of the Canadian Council of Forest Ministers. This expertise supported the identification of prevention efforts and early actions applicable to any un-infested area in Canada.

More broadly, NRCan produced a risk-impact matrix for five groups of high-priority pathogens in Canada. In addition, NRCan completed a risk assessment of the invasive

Phytophthora ramorum to Canadian larch in collaboration with the Canadian Food Inspection Agency. The Department also provided expertise to mitigate the risk from fire through the Canadian Wildland Fire Information System and at the National Wildfire workshop, which representatives from Canada, Australia and the United States attended.

Sub-Program 3.1.4: Climate Change Adaptation

Description: Climate change poses a risk to Canadian businesses, communities and infrastructure, and collaboration across multi-jurisdictional areas is challenging. This sub-program supports collaboration amongst key regional stakeholders across Canada, including government departments and agencies, private sector and community organizations. These collaborations enable discussion on key adaptation issues and preparation of practical adaptation measures that will prepare for and take advantage of the risks and opportunities resulting from climate change. This sub-program also delivers scientific analysis on key climate change issues affecting Canada's North (North of 60 latitude). Overall, this sub-program helps Canada to better understand, make informed decisions and take practical actions to respond to a changing climate.

Financial Resources – For Sub-Program 3.1.4 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
11,397	5,909	5,488

*The difference between Planned Spending and Actual Spending is partly attributed to Budget 2012 Savings Measures associated with the Climate Change Geoscience Program, as well as the need by the Climate Change Impacts and Adaptation Directorate to reprofile significant resources for Enhancing Competitiveness in a Changing Climate.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 3.1.4

Planned 2012-13	Actual 2012-13	Difference 2012-13
75	33	42

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 3.1.4

Expected Result	Performance Indicator	Target	Actual Result
Public and private sector decision-makers across Canada consider climate change in their planning	Percentage change in number of public or private sector decision-makers considering climate change in their planning	30% total increase over baseline query (2009-10) by March 31, 2014	The survey to determine the percentage change in decision-makers considering climate change in their planning will be undertaken in 2014-15. Source: NRCan survey results.
Governments and communities in the North (North of 60 latitude) are aware of information on adaptation measures	Number of projects (for design or implementation phases) considering climate change geoscience adaptation measures	4 by March 31, 2013	Target delayed. Three projects that consider climate change geoscience adaptation measures are currently underway. Source: Annual Program Performance Reports, Stakeholder consultation records.

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[74].

Performance Analysis and Lessons Learned

To help address the impacts of climate change on natural resources, NRCan provided expertise to and collaborated with other government departments in 2012-13. For example, NRCan launched a national Adaptation Platform, which provides a forum for all levels of government, the private sector and other key stakeholders to generate new information and insights, share information, experience and expertise, and identify opportunities for adaptation initiatives. NRCan also signed agreements with federal and provincial partners to conduct studies and assessments related to the impacts of climate change on northern land-based and coastal infrastructure, including the development of methodologies to assess impacts on infrastructure, such as highways and airport runways.

Through this Sub-Program, the Department completed sea-level projections for coastal communities across Canada. These projections are being incorporated into a national coastal assessment. NRCan also released a report on the impacts of permafrost on transportation in the Arctic and Northern Cordillera that was presented at the Yellowknife Geoscience Forum as well as 14 papers and reports on climate change and adaptation measures as a result of field campaigns. These accomplishments supported Goal 1 (Climate Change) and target 1.1 (Climate Change Mitigation) of the 2010-13 FSDS.

While the Department did not meet the target for the number of new projects in the North, the following three projects are currently underway:

- Land-Based Infrastructure;
- Coastal and Landscape Stability Infrastructure; and
- Essential Climate Variables monitoring (e.g., glacial mass balance, permafrost, snow cover).

These projects were established in collaboration with local and territorial partners (Northwest Territories and Nunavut) and agreements with northern partners (e.g., Aboriginal Affairs and Northern Development Canada, Transport Canada, Environment Canada).

The Department intends to conduct a survey in 2014-15 to determine the percentage change in the number of public or private sector decision-makers considering climate change in their planning.

Sub-Program 3.1.5: Geohazards and Public Safety

Description: To ensure that Canadians are protected from natural hazards constant monitoring and effective planning for adverse natural events are required. Such events include earthquakes, volcanic eruptions, landslides, geomagnetic storms, radiological and nuclear incidents, and tsunamis. The provision of hazard information and products helps other levels of government, including international government bodies, the private sector and professional organizations such as the Canadian Institute of Planners to prepare for and mitigate natural disasters. This work also meets NRCan obligation for ongoing nuclear test monitoring, as is required under the Comprehensive Nuclear Test Ban Treaty. This sub-program comprises of a research component that disseminates risk-related information to support the response, recovery and preparedness phases of emergency management.

Financial Resources – For Sub-Program 3.1.5 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
10,080	15,091	(5,011)

*The difference between Planned Spending and Actual Spending is partly attributed to revenue collections coming in lower than planned for, and partly attributed to expenditures related to severance pay and parental benefits, which were not included in Planned Spending. Additionally, expenditures planned for sub-program 1.3.5 New Energy Supply were subsequently spent in program 3.1.5 Geohazards and Public Safety due to redeployment of staff as well as a scientific response to study the aftermath of the large earthquake off the coast of British Columbia in 2012.

Human Resources – (Full-Time Equivalent – FTEs)* – Sub-For Program 3.1.5

Planned 2012-13	Actual 2012-13	Difference 2012-13
108	99	9

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 3.1.5

Expected Result	Performance Indicator	Target	Actual Result
Other levels of government, private sector and professional organizations involved in emergency management in Canada rely on information from NRCan's hazard information services and hazard mitigation knowledge products for decision-making	Annual number of other levels of government, private sector or professional organizations involved in emergency management in Canada confirming level of satisfaction and use of NRCan information in decision-making	5 by March 31, 2013	At least five organizations involved in emergency management in Canada used NRCan's information in decision-making. Source: Meeting minutes, Annual Program Performance Reports.

Performance Analysis and Lessons Learned

In 2012-13, NRCan continued to provide expertise to mitigate the risks associated with earthquakes and other natural hazards. For example, NRCan expertise helped with the design of British Columbia's public earthquake mitigation program ("Shakeout BC"). The Department also improved the National Earthquake Model for Canada and developed shear wave velocity measurement guidelines. Additionally, the Canadian Hazard Information Service (CHIS), using "cloud" technology, reviewed and implemented a more robust information system to ensure rapid delivery of earthquake information to Canadians. The renewed service provides automated alerts on any earthquake in Canada having a magnitude greater than four. In addition to the introduction of "cloud" technology, CHIS implemented a Twitter account, delivering automated posts to disseminate critical information to Canadians. The scope of the system was also expanded to include alerts for severe space weather.

NRCan's hazards-related expertise was also used to achieve the following:

- NRCan completed national-level hazards maps on landslide and tsunami susceptibility;

- Hydroelectric companies (e.g., Hydro One, Manitoba Hydro) adopted NRCan's geomagnetically induced currents (GIC) simulator, which helps to analyze and predict geomagnetically induced currents to mitigate their impacts on electricity supply systems;
- The District of North Vancouver (DNV) incorporated NRCan's seismic risk assessment scenarios into its sustainable hazard risk management and disaster risk reduction initiatives; this was the final year of a four-year partnership with DNV;
- The Canadian Space Agency used NRCan's analysis of the radiation environment to inform the design of its Polar Communication and Weather (PCW) mission; and
- The Canadian Commission on Building and Fire Codes incorporated NRCan's information into the National Building Code; NRCan seismologists are part of the Commission.

Program 3.2: Landmass Information

Description: NRCan provides clearly-defined legal boundaries, a robust property system framework, authoritative geographic infrastructure and fundamental geospatial information on Canada's landmass. Without these frameworks, negative impacts will result to the Canadian economy, environment and standard of living. This program delivers Canada's regulatory system for Canada Lands legal surveys, the fundamental geodetic reference system, earth observation and mapping information. Together, these support the Canadian public, other federal departments and levels of government, the private sector and academia to carry out a variety of decisions founded on location-based information, such as land transactions, commercial/industrial development, transportation and logistics. This information enables effective management of Canada's natural resources and lands including opportunities for collaboration across jurisdictions (i.e. cross-border planning, regulatory efficiency), which advances the interests of Canada's natural resources sectors, both domestically and at the international level. Progress towards this program was achieved through the delivery of three sub-programs.

3.2 Landmass Information

3.2.1 Essential Geographic Information a n

3.2.2 Canada's Legal Boundaries

3.2.3 Polar Continental Shelf Logistics Support

Financial Resources – For Program 3.2 ($ thousands)

Total Budgetary Expenditures 2012-13	Planned Spending 2012-13	Total Authorities 2012-13	Actual Spending 2012-13	Difference* 2012-13
48,117	48,117	103,326	90,961	(42,844)

*The difference between Planned Spending and Actual Spending is primarily attributed to in-year funding received in Supplementary Estimates, expenditures related to salary that were not included in Planned Spending, transfers from program 1.2 Innovation for New Products and Processes and program 1.3 Investment in Natural Resource Sectors, Budget 2012 Savings Measures, a reprofile, and a lapse. As well, some funding for overhead was transferred to Internal Services.

Human Resources – (Full-Time Equivalent – FTEs)* – For Program 3.2

Planned 2012-13	Actual 2012-13	Difference 2012-13
416	471	(55)

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Program 3.2

Expected Result	Performance Indicator	Target	Actual Result
Public, private sectors and academia use trusted, accurate, Government of Canada geo-making information for decision-making and research	Number of public, private sectors and academia using landmass information	6 large federal departments/ agencies by March 31, 2013	The Program met its target of six federal departments and agencies using geo information on Canada's landmass. Moreover, other public and private organizations used the information as well. Source: Annual Program Performance Reports.
	Client satisfaction or benchmarking results on Canada's legal boundary framework for effective governance, economic and social development	Positive trend on bi-annual client satisfaction surveys (rotational amongst Baseline years ending 2012-13 by March 31, 2013	As a result of reallocating resources stemming from Budget 2012, the planned bi-annual survey of key client groups was not undertaken. However, a program evaluation scheduled for 2013-14 will include a client survey as part of the data collection phase of the evaluation. The Department will consider using these survey results for their new baseline year, which will now be 2013-14. Source: Annual Program Performance Reports.

Performance Analysis and Lessons Learned

In 2012-13, NRCan produced essential geographic information (e.g., maps), provided expertise on Canada's legal boundaries, and provided coordinated logistical support in the North through its sub-programs. These activities supported performance results at this program level and enabled stakeholders to make informed decisions on the management of Canada's lands and natural resources and to mitigate related risks.

The performance results demonstrate that expertise produced by NRCan has been accessed and used by stakeholders in 2012-13. Multiple organizations in both the public and private sectors used landmass information produced by NRCan (e.g., Google, University of Guelph). In addition, NRCan and other federal government departments are using these data, for example to help communicate with stakeholders on areas of mineral resource potential in the North. Agriculture and Agri-Food Canada is using NRCan's base mapping data for crop analysis and other program delivery iniatives. Environment Canada uses NRCan's landmass information for land-use planning and protection activities, such as the wetlands protection initiative. Parks Canada uses NRCan's Earth observation data to map ecosystem integrity in Canada's national parks. And Aboriginal Affairs and Northern Development Canada uses Canada's legal boundary framework to underpin its activities in support of land and resource management administration.

NRCan continues to deliver a high level of service in providing its federal public clients and other stakeholders with authoritative landmass information. In 2012-13, NRCan responded to 2,667 client service requests.

Sub-Program 3.2.1: Essential Geographic Information

Description: Many socio-economic and environmental decisions, such as land-use, elections planning, emergency preparedness and response, transportation and real estate, would generate inconsistency, disputes or turmoil without authoritative geographic information. This sub-program delivers Canada's fundamental geodetic reference system, remote sensing technologies and authoritative mapping, earth observation and other location-based products and solutions. NRCan's policies, infrastructure and products support a variety of socio-economic and environmental decision-making carried out by other departments and levels of government, private sector and academia as well as the public necessary for effective management of Canada's natural resources and lands.

Financial Resources – For Sub-Program 3.2.1 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
24,569	54,604	(30,035)

*The difference between Planned Spending and Actual Spending is partly attributed to in-year funding received in Supplementary Estimates related to the Revitalization of NRCan's Satellite Station Facilities across Canada, and partly to expenditures related to the settlement of collective agreements and severance pay, which were not included in Planned Spending, as well as one-time payments for workforce adjustment. Additionally, expenditures originally planned for sub-program 1.2.3 Geomatics Innovation were subsequently spent in sub-program 3.2.1 Essential Geographic Information.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 3.2.1

Planned 2012-13	Actual 2012-13	Difference 2012-13
254	314	(60)

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 3.2.1

Expected Result	Performance Indicator	Target	Actual Result
Public, private sector and academia access geographic and geospatial information for the management of natural resources and lands	Number of downloads for geographic and geospatial information (geo-information)	5% increase by March 31, 2013 (baseline 2010-11)	The number of downloads in 2012-13 were more than 7.4 million, 34% above the baseline of 2010-11. Source: Annual Program Performance Reports.

*More information on the Departmental Sustainable Development Strategy can be obtained at NRCan's Planning and Reporting website[73].

Performance Analysis and Lessons Learned

In 2012-13, NRCan delivered data and derived products, including geographic coordinates and satellite data to other government departments, the Canadian public and the private sector to inform decision-making relating to sustainable resource development, land issue management, park protected habitat, forest fires, alien invasive species and climate monitoring. This information was accessed and used by stakeholders, as illustrated by the number of downloads by stakeholders, which increased by 34% compared to 2010-11 levels. However, the increase underestimates the uptake as it does not capture other users of the information. This work supported Goal 1 (Climate Change) and target 1.1 (Climate Change Mitigation), as well as Goal 6 (Ecosystem/Habitat Conservation and Protection) and target 6.2 (Terrestrial Ecosystem and Habitat) of the 2010-13 FSDS.

NRCan increased the accessibility of geographic information. For instance, it developed a new management tool with an innovative algorithm that manages elevation data in a more flexible, multi-representative manner. This system allows users to retrieve the specific data they require, and ensures greater geographical accuracy and efficiency. This tool and algorithm are now part of the PostgreSQL open source database available to all Canadians and other stakeholders.

The number of clients using NRCan's online Precise Point Positioning (PPP) service increased by 15% compared to 2011-12. Active clients, primarily from industry—including land surveying, engineering, natural resources, geospatial firms—as well as academia use this information to process their Global Positioning System (GPS) data. This standard for reliable, authoritative and accurate positioning information enables users to consistently obtain centimetre-level positions they need to conduct their business.

NRCan completed satellite-based coast-to-coast land cover products, including a ten-year land cover time series. These provide updated information to many clients, and complement NRCan's previous land cover products, such as the circa 2000 sub-arctic land cover, which is downloaded 55,000 times annually.

The Department also ensured that landmass information was gathered from across the country. To this end, NRCan used funding from Budget 2012 and its existing reference levels to undertake a project to revitalize satellite station facilities in Saskatchewan, Quebec and Northwest Territories. The revitalization also includes a new data management system to house and safeguard satellite information. This new system will ensure access to satellite Earth observation data and products as well as aerial photography from one portal, providing easier access to this wealth of information about Canadian landmass and waters.

Sub-Program 3.2.2: Canada's Legal Boundaries

Description: Boundary uncertainty undermines public confidence in the property rights system and is a barrier to exercising property and sovereign rights, as well as responsible social and economic development. For the benefit of all Canadians, this program ensures boundary certainty through: a) the proper maintenance of the Canada/United States international boundary for law enforcement, land administration, customs and immigration, and trans-boundary resource management; b) effective boundary surveys of Aboriginal settlement lands to meet Canada's obligations under land claim settlement legislation and treaties; and c) statutory registration of legal surveys on Canada Lands (the North, Canada's offshore area, Aboriginal Lands and National Parks), essential to the creation of property parcels. The boundary certainty provided by this sub-program promotes public confidence, enables effective management of Canada lands and collaboration across jurisdictions, which advances the interests of Canada's natural resources sectors, both domestically and at an international level.

Financial Resources – For Sub-Program 3.2.2 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
16,945	15,747	1,198

*The difference between Planned Spending and Actual Spending is partly attributed to Budget 2012 Savings Measures, a reprofile for the Comprehensive Land Claims Program, and a year-end lapse.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 3.2.2

Planned 2012-13	Actual 2012-13	Difference 2012-13
152	127	25

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 3.2.2

Expected Result	Performance Indicator	Target	Actual Result
Statutory obligations and interdepartmental commitments are achieved in support of boundary certainty for Canada and First Nation lands	Cumulative % age achieved on the International Boundary Maintenance joint 15-year plan (United States and Canada)	50% by March 31, 2013	The cumulative percentage of 50% was achieved. Source: International Boundary Commission data and year-end reports.
	Percentage of statutory obligations and interdepartmental commitments achieved as defined in the legislation and agreements for Canada and First Nation lands	100% achieved per the annual plan by March 31, 2013	100% of statutory obligations and commitments were achieved. Source: Surveyor General Branch Project Management Information System & Association of Canada Land Surveyors Annual Report.

Performance Analysis and Lessons Learned

NRCan's work related to legal boundaries is important to ensure public confidence and the ability to exercise property or sovereign rights through boundary certainty.

The performance results indicate that all targets for this sub-program were met in 2012-13. Specifically, the Canadian Section of the International Boundary Commission maintenance continues to be on track based on the spring 2013 Commissioners' Meeting Records of Decision. Also, all field projects for 2012-13 assigned to the Canadian Section along the Quebec-Maine-New York-Vermont border, including monument refurbishing, vegetation clearing, surveying and inspections were completed on time and within budget.

NRCan completed 100% of the 36 active agreements for work related to boundary and parcel surveys for First Nation lands, valued at approximately $5.3 million. For example, the annual plan for the Yukon Land Claim work was developed in consultation with Settlement Land Committees, to define by survey the extent of settlement land selections for Yukon First Nations. The Tlicho Land Claim survey requirement was deferred and is therefore not considered part of this result.

In addition, NRCan analyzed the array of scientific data required that will be used to support Canada's submission to the United Nations Convention on the Law of the Sea (UNCLOS). Foreign Affairs, Trade and Development Canada (DFATD) will draft and deliver the submission documents required, including the Atlantic and the Arctic scientific evidence supporting Canada's claim to extend its offshore limits beyond the traditional 200 nautical miles. Drafting of the submission is progressing on time for the December 2013 targeted deadline. This sub-program will be evaluated in 2013-14.

Sub-Program 3.2.3: Polar Continental Shelf Logistics Support

Description: Due to the harsh and dangerous working conditions in Canada's expansive Arctic and Sub-arctic regions, there is an ongoing need to provide safe, efficient and cost-effective logistical support throughout the Canadian Arctic. The Polar Continental Shelf Program (PCSP), as mandated by the *Resources and Technical Surveys Act*, coordinates and delivers efficient and cost-effective logistical support to researchers conducting field work in the Canadian Arctic, such as air transportation to and from remote field camps, equipment and fuel. PCSP also provides accommodations at their facility in Resolute, Nunavut. This service is delivered to researchers from Canadian government agencies, northern communities, and independent and university groups, as well as international academia conducting scientific activities in remote and isolated areas throughout the Canadian Arctic thereby contributing to the safety of visiting scientists in the Canadian Arctic regions.

Financial Resources – For Sub-Program 3.2.3 ($ thousands)

Planned Spending 2012-13	Actual Spending 2012-13	Difference* 2012-13
6,602	20,610	(14,008)

*The difference between Planned Spending and Actual Spending is mainly attributed to in-year funding received in Supplementary Estimates related to a transfer from National Defence for the construction of the Canadian Forces Arctic Training Centre. Additionally, some expenditures planned for sub-program 1.3.4 Geo-Mapping for Energy and Minerals were subsequently spent in sub-program 3.2.3 Polar Continental Shelf Logistics Support.

Human Resources – (Full-Time Equivalent – FTEs)* – For Sub-Program 3.2.3

Planned 2012-13	Actual 2012-13	Difference 2012-13
10	31	(21)

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Results – For Sub-Program 3.2.3

Expected Result	Performance Indicator	Target	Actual Result
Canadian gov't agencies and Canadian and int'l academia receive cost-effective logistical support	Percentage of projects supported within budget constraints	95% by March 31, 2013	138 projects (94%) received some level of Polar Continental Shelf Program (PCSP) logistics support for the reporting period. Source: Annual Program Performance Reports.

Performance Analysis and Lessons Learned

The performance results indicate that the target for this sub-program was met in 2012-13. In its first full year of operations, the new Dr. Roy "Fritz" Koerner laboratory was operating at full capacity and client feedback indicated that the lab was a great addition to the Polar Continental Shelf Program (PCSP) support services. In conjunction with Shared Services Canada, NRCan also initiated the installation of a dedicated satellite connection in Resolute, which will improve business systems, communications and project management. During the 2012 field season, the PCSP supported 138 Arctic science projects and more than 40 additional requests for specialized field science equipment across Canada.

An evaluation[76] of the Polar Continental Shelf Program (PCSP) found the program to be highly relevant and aligned with federal government priorities and federal roles and responsibilities. The evaluation also helped guide the program to enhance its project management tools, service standards and to better demonstrate achievements on how it addresses needs for coordinated logistics support for research teams and other public or academic organizations in the Canadian Arctic.

Internal Services

Description: This program regroups three areas to deliver NRCan's mandate and priorities: governance and management support, resource management services, and asset management services. The key to the effectiveness and efficiency of this program is the ability of internal services to adjust and respond to evolving business priorities and requirements. This allows the Department to better align its priorities to those of Canadians, its activities to its priorities, and its resources to its activities. It also increases NRCan's capacity to monitor the financial and non-financial performance of its activities and programs.

NRCan continued the implementation of its four corporate directions: asserting our policy leadership, mobilizing our science, transforming our business and managing our human capital. These ensured that the Department further develops its capacity, responsiveness and resilience to maximize its contribution to the Government of Canada and to Canadians.

Financial Resources – For Internal Services ($ thousands)

Total Budgetary Expenditures 2012-13	Planned Spending 2012-13	Total Authorities 2012-13	Actual Spending 2012-13	Difference* 2012-13
147,720	147,720	187,192	181,093	(33,373)

*The difference between Planned and Actual Spending results in part from funding received in Supplementary Estimates for NRCan's programs, which included an internal services element. The other portion of the increase is attributed to a transfer of funds to pay for a portion of the overhead costs.

Human Resources – (Full-Time Equivalent – FTEs)* – For Internal Services

Planned 2012-13	Actual 2012-13	Difference 2012-13
1,063	1,105	(42)

*FTEs are a measure of the extent to which an employee represents a full person-year charge against a departmental budget. FTEs are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Performance Analysis and Lessons Learned

In 2012-13, NRCan continued to make progress towards achieving its corporate priorities, which are asserting its policy leadership, transforming its business, mobilizing its science and technology, and growing its human capital.

NRCan asserted its policy leadership both internally and externally. Internally, the Department launched a one-stop-shop for socio-economic data, known as the data hub. Externally, NRCan provided expertise for the Energy Pathways Project, which examined the impacts of energy-related technologies (e.g., net zero buildings) on Canada's energy economy, and supports the broader energy innovation framework. NRCan also led the development of the Government of Canada's position on transparency for the Extractive Industries Transparency Initiative, which was part of the 2013 G8 Leaders' summit.

To support the transformation of its business, NRCan delivered the Information Management Technology (IMT) Strategic Plan, 2013-14 to 2017-18, as well as the 2013-18 Investment Plan. The Department also supported the transition of IMT functions to Shared Services Canada through the transfer of 76 FTEs and $31.4 million. NRCan's Business Process Improvements Horizontal Task Team implemented business process improvements in 7 areas, such as travel booking and staffing. The Department engaged stakeholders and updated the NRCan Communications and Public Participation framework.

The Department supported the mobilization of its science and technology through the establishment of an internal Science and Technology Board, chaired by the DM. The board established 23 Signature Projects, which capture more than 95% of the S&T done by NRCan, including the tracking of associated financial spending. The Department also launched an online S&T Publications Policy system, which provides policy analysts and scientists with easy access to a range of S&T resources. In addition, NRCan established the Policy-Science Integration Community of Practice to encourage ongoing integration of the two areas and to strengthen the relationship between policy analysts and scientists.

NRCan contributed to the goal of growing its human capital by developing an action plan to respond to the results of the Public Service Employee Survey. NRCan also implemented components of the Employment Equity, Official Languages and Wellness and Disability Management actions plans. Additionally, the Department identified a second co-champion for values and ethics at the Assistant Deputy Minister level to strengthen the governance structure. NRCan supported talent management by ensuring that 95% of performance management activities were completed. The Department also developed the Role of the Manager paper and the Managers' Community 2013-14 annual plan.

The department contributes to the Federal Sustainable Development Strategy (FSDS), including Theme IV: Shrinking the Environmental Footprint – Beginning with Government. Specific targets in the area include greenhouse gas emissions reduction, real property environmental performance, green procurement, and water management.

For additional details on NRCan's Greening Government Operations activities, see NRCan website[77].

Section III: Supplementary Information

Financial Statements Highlights

The financial highlights are intended to provide a general overview of the Department's financial position and the net cost of operations before government funding and transfers. The financial highlights presented in this section are drawn from NRCan's financial statements and have been prepared in accordance with Treasury Board accounting policies, which are based on Canadian public sector accounting standards.

Condensed Statement of Operations and Departmental Net Financial Position

Natural Resources Canada
Condensed Statement of Operations and Departmental Net Financial Position
(Unaudited)
For the Year Ended March 31, 2013 ($ millions)

	2012-13 Planned Results	2012-13 Actual	2011-12 Actual	$ Change (2012-13 Planned vs. Actual)	$ Change (2012-13 Actual vs. 2011-12 Actual)
Total expenses	2,794	1,964	3,460	830	(1,496)
Total revenues	38	26	25	12	(1)
Transferred operations			15		(15)
Net cost of operations before government funding and transfers	2,756	1,938	3,450	818	(1,512)
Departmental net financial position		(1,060)	(1,119)		(59)

Total expenses were $3.460 billion in 2011-12 compared to $1.964 billion in 2012-13 for a net decrease of $1.496 billion or 43%, which is fully attributable to transfer payments. The operating expenses have remained constant between 2011-12 and 2012-13 (respectively $889 million and $890 million). The net decrease in transfer payments can be mainly explained as follows:

- $749 million or 50% of the reduction is due to reduction in payments from 2011-12 to 2012-13 to the Newfoundland Offshore Petroleum Resource Revenue Fund ($494 million), to the Nova Scotia Offshore Revenue Account ($102 million), to the Crown Share Adjustment Payments for Nova Scotia Offshore Petroleum Resources ($59 million), to the Clean Energy Fund ($67 million) and to ecoENERGY for Biofuels ($27 million);

- The variance in Royalties collected and paid to the Newfoundland Offshore Petroleum Resource Revenue Fund and to the Nova Scotia Offshore Revenue Account is, from year to year, entirely a function of such factors as production levels, commodity prices and operator costs.

- $688 million or 46% of the reduction is attributable to a number of large transfer payment programs that have ended in 2011-12, mainly ecoENERGY Retrofit – Homes ($198 million in 2011-12), Pulp and Paper Green Transformation Program ($450 million in 2011-12) and ecoENERGY Technology and Innovation ($40 million).

The revenues have remained constant from 2011-12 ($25 million) to 2012-13 ($26 million). The planned revenues were based on historical data.

Transferred operations in 2011-12 represent the transfer by the Department to Shared Services Canada (SSC) on November 15, 2011, of the responsibility for providing email, data centre and network services. For 2011-12, the $14.8 million represents the expenses incurred by the Department for SSC's activities for the period April 1 to November 14, 2011, where the transfer of activities to SSC became effective. In 2012-13, SSC incurred these expenditures and reported these on their financial statements.

The planned results presented are derived from the amounts presented in the 2012-13 future-oriented statement of operations and included in the 2012-13 Departmental Report on Plans and Priorities. The planned results were based on several assumptions and information known at that time.

The difference in total expenses between the 2012-13 actual ($1,964 million) and the 2012-13 planned results ($2,794 million) is $830 million or 29% of overestimated expenses. This is attributable in part to a $510 million decrease in the statutory programs, specifically to the unforeseen decrease in offshore payments of $451 million and $59 million for the statutory grant payment to the Canada Foundation for Sustainable Development Technology. It is also attributable to a decrease in Grants and Contributions of $319 million attributable to lapsed programs mostly attributable to the Clean Energy Fund Program ($127 million), to ecoENERGY for Biofuels ($106 million) and to the Grant to the Canada Foundation for Sustainable Development Technology ($63 million).

Condensed Statement of Financial Position

Natural Resources Canada
Condensed Statement of Financial Position (Unaudited)
As at March 31, 2013 ($ thousands)

	2012-13	2011-12	$ Change
Total net liabilities	1,769	2,361	(592)
Total net financial assets	462	928	(466)
Departmental net debt	1,307	1,433	(126)
Total non-financial assets	248	314	(66)
Departmental net financial position	(1,059)	(1,119)	60

Total net liabilities have varied from $2.361 billion in 2011-12 to $1.769 billion in 2012-13 resulting in a net decrease of $592 million or 25%. $589 million of the $592 million is attributable to:

- a decrease of $369 million in accounts payable and accrued liabilities attributed mostly to terminated transfer payment programs in 2011-12 for which payables were not set up in 2012-13;
- a decrease of $180 million in transfer payment holdbacks explained by the release of holdbacks as transfer payment program are terminated;
- a decrease of $50 million in environmental liabilities;

- increases of $32 million in the allowance for contingent liabilities;
- a decrease of $16 million in estimated workforce adjustment costs;
- a decrease of $14 million in employee future benefits, mainly due to the elimination of severance pay for certain groups of government employees; and
- an increase of $8 million in payables to other government departments.

Total net financial assets have decreased by $466 million or 50% (from $928 million in 2011-12 to $462 million in 2012-13). The decrease is mainly attributable to the decrease in the account Due from Consolidated Revenue Fund (CRF) of $468 million, which represents cash the Department is entitled to draw from without further appropriations. The decrease in the transfer payment holdbacks and the decrease of accounts payable and accrued liabilities as indicated above are the main contributors to the decrease in the account Due from CRF.

The overall change in total net liabilities and total net financial assets are then reflected in the Departmental net debt.

Total non-financial assets, which include prepayments, inventory and tangible capital assets varied from $314 million in 2011-12 to $248 million in 2012-13, resulting in a net decrease of $66 million. A decrease of $80 million in prepayments offset by a net increase of $14 million in tangible capital assets explains that variance. The decrease of $80 million in prepayments is the result of a change in accounting policy required with the adoption of the Treasury Board accounting policy 3.2 – Transfer Payments, which translated into expensing in 2012-13 of $85 million in transfer payment prepayments.

The total non-financial assets are then subtracted from the Departmental net debt to reflect the Departmental net financial position.

Financial Statements

NRCan's financial statements are available online[78].

Supplementary Information Tables

Details on Transfer Payment Programs

Greening Government Operations

Horizontal Initiatives

Internal Audits and Evaluations

Response to Parliamentary Committees and External Audits

Sources of Respendable and Non-Respendable Revenue

Up-Front Multi-Year Funding

User Fees Reporting

All electronic supplementary information tables listed in the 2012-13 Departmental Performance Report can be found on NRCan's website[79].

Tax Expenditures and Evaluations Report

The tax system can be used to achieve public policy objectives through the application of special measures such as low tax rates, exemptions, deductions, deferrals and credits. The Department of Finance publishes cost estimates and projections for these measures annually in the Tax Expenditures and Evaluations[80] publication. The tax measures presented in the Tax Expenditures and Evaluations publication are the sole responsibility of the Minister of Finance.

Section IV: Other Items of Interest

Organization Contact Information

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NRCan's Plans and Performance Reports Website

NRCan has developed a website for its plans and performance reports, which presents the Department's plans and performance by fiscal year as well as linkages to the Federal Sustainable Development Strategy and the Clean Air Agenda. For more information, visit NRCan's Plans and Performance Reports Website[82].

Endnotes

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[1] http://www.nrcan.gc.ca/acts-regulations/332
[2] http://laws-lois.justice.gc.ca/eng/acts/N-20.8/
[3] http://laws-lois.justice.gc.ca/eng/acts/R-7/
[4] http://laws-lois.justice.gc.ca/eng/acts/F-30/
[5] http://www.nrcan.gc.ca/portfolio/573
[6] http://www.aecl.ca/Home.htm
[7] http://www.neb-one.gc.ca/clf-nsi/index.html
[8] http://nuclearsafety.gc.ca/eng/
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[14] http://www.ec.gc.ca/dd-sd/default.asp?lang=En&n=CD30F295-1
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[16] http://actionplan.gc.ca/en/initiative/responsible-resource-development
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[18] http://www.nrcan.gc.ca/earth-sciences/about/current-program/geomapping/7131
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